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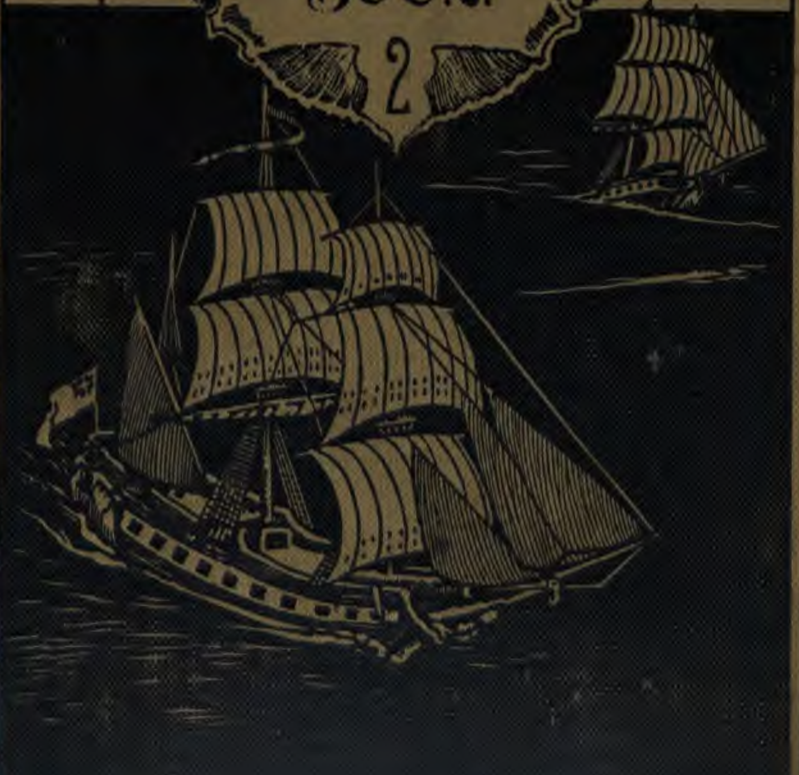

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LONGMANS' 'SHIP' SERIES

PICTORIAL GEOGRAPHICAL READERS

BOOK II

LESSON 1

THE SALT SEA

Au'-gust
sul'-try
swarm'-ing
ba'-thers
dis-solv'-ed
su'-gar
salt'-ness
thou'-sands
rath'-er
dif'-fer-ence
ques'-tion
sev'-er-al
rea'-sons
va'-pour
mouth'-ful
Bal'-tic

1. August had come again with its hot, sultry days, and the seaside places were full. Each morning the beach was swarming with bathers, among whom could be seen our young friend Tom and his father.

2. Tom's father was teaching him to swim, and a great deal of water was finding its way into Tom's mouth, because he would not keep it shut. He did not like the taste of the salt water, which made him feel rather sick.

3. A short time afterwards they were dressed and resting on the sands. 'What makes the water so salt, father?' Tom asked.

4. 'One reason is that the rain water, springs, and streams wash away the ground over which they flow,' said his father. 'Some of the earth contains little grains of salt, which dissolve in the water like the sugar dissolves in your tea, and the rivers carry them into the sea. In this way the sea gets some of its saltness.'

5. If all the rivers kept bringing little grains of rock salt to the sea, it seemed to Tom that the sea must grow more salt each day.

6. Tom's thoughts, however, were cut short by his father, who went on to say that the sea is salter in some places than in others, and that on the whole it is thought to be growing very slowly more salt each year.

7. 'But it would take many thousands of years to make any real difference,' he added. 'The sea covers about three-quarters of the earth's crust, so that the work of making the sea more salt must be a very slow one. Besides, much of the salt is used to form the bones and shells of the fish which swarm in the sea.'

8. Tom could still taste the salt, and so another question came at once. 'Why is the

sea more salt in one place than in another ?' he asked.

9. 'There are several reasons,' said his father. 'In the hot parts of the world more water rises from the sea in the form of vapour than is brought in by the rivers. The salt is left behind, and so makes the sea more salt.

10. 'The Red Sea is a very salt sea for this reason. Then again, no rivers flow into it, and hardly any rain falls.'

11. 'Well, I am glad I did not get a mouthful of the Red Sea,' said Tom with a wry face.

12. 'I am just as glad,' said his father. 'But in the Baltic or the Black Sea the water is fresher, because less water rises in the form of vapour, more rain falls, and there are some large rivers flowing into each.'

LESSON 2

THE OCEANS

watch'-ed
o'-ce-an
no'-tice
At-lan'-tic
Pa-cif'-ic
ship'-ped
con'-ti-nents
high'-ways
child'-ren
po'-lar
fro'-zen
In'-di-an

1. Tom and his father still sat on the sands after their chat about the salt in the sea, and watched the merry play of the children.

2. A big ship came into sight far out at sea. ‘There is a fine ocean liner,’ said his father to Tom.

3. ‘I notice that sometimes when you are speaking of the sea, you say “sea,” and sometimes you say “ocean.” Do both words mean the same?’

4. ‘Yes, in a sense,’ said his father; ‘but the largest seas of all are called oceans. There are five great seas or oceans, and what we call seas are parts of the oceans.’

5. ‘Then a sea is really a piece of an ocean,’ said Tom.

6. ‘A sea is a piece of the ocean which has land nearly all round it. The next time you see a map you can note that fact.’

7. ‘But I cannot see the land nearly all round this sea,’ said Tom. ‘The water seems to meet the sky far out at sea.’

8. ‘We cannot see more than a few miles,’ said his father, ‘and a sea may be many miles long and many miles wide.’

9. ‘Which ocean does this sea form part of?’

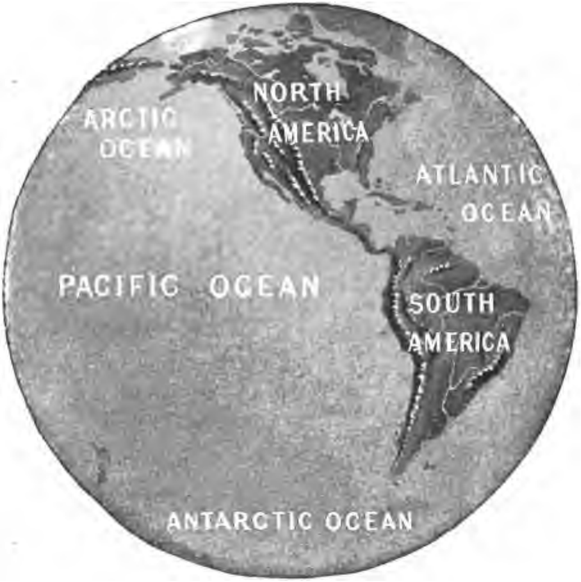
10. ‘The Atlantic. It is, as a rule, called the chief ocean, although it is not the largest.’

11. ‘Which is the largest, then?’

AN OCEAN LINER AND A SAILING SHIP

12. ‘The Pacific. It is the same length as the Atlantic, but it is about twice as wide. It is very deep in some parts. In one part it is nearly six miles deep.’

13. ‘Then why is the Atlantic the chief ocean?’ asked Tom.



THE WESTERN HEMISPHERE

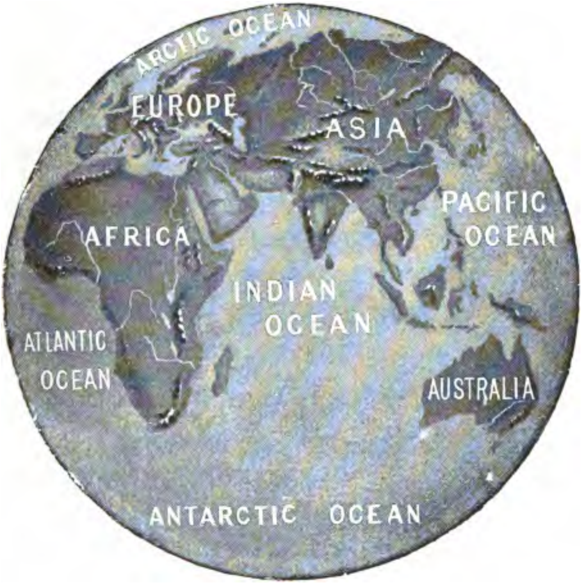
14. ‘It is the trade ocean. More ships sail over it than over the Pacific.’

15. ‘The ships are used for trade, are they not, father?’

16. ‘Yes, the great bulk of them; but there

is another reason. The Atlantic has a number of very large rivers flowing into it, while the Pacific has very few.

17. ‘Rivers are great highways for trade. Things grown or made far inland can be brought at a cheap rate to the coast by means of rivers, and so be shipped to other lands.’



THE EASTERN HEMISPHERE

18. ‘What are the names of the other oceans?’

19. ‘The Indian Ocean is the next largest.

Then there is an ocean round the North Pole, and another round the South Pole; but we do not know so much about the polar oceans, because they are frozen over, more or less, all the year round.'

LESSON 3

A STORM SONG

scud′-ding
ter′-ror
gath′-er-ing
whist′-ling
tem′-pest
rig′-ging
ter′-ri-ble
snap′-ped
whelm′-ing
sur′-ges
pit′-i-less
drift′-ing
des′-ert
cour′-age
guid′-ing
har′-bour

1. The clouds are scudding across the moon;
A misty light is on the sea;
The wind in the shrouds has a wintry tone,
And the foam is flying free.

2. Brothers, a night of terror and gloom
Speaks in the cloud and gathering roar;
Thank God, He has given us broad sea-room,
A thousand miles from shore.

3. Down with the hatches on those who sleep!
The wild and whistling deck have we;
Good watch, my brothers, to-night we'll keep,
While the tempest is on the sea!

4. Though the rigging shriek in his terrible grip,
And the naked spars be snapped away,
Lashed to the helm, we'll drive our ship
In the teeth of the whelming spray.

5. Hark, how the surges o'erleap the deck!
Hark, how the pitiless tempest raves!
Ah! daylight will look upon many a wreck
Drifting over the desert waves.

6. Yet, courage, brothers! we trust the wave,
With God above us, our guiding chart;
So, whether to harbour or ocean-grave,
Be it still with a cheery heart!

Bayard Taylor.

LESSON 4

A WALK ALONG THE COAST

e'-ven-ing
head'-land
de-pend'
sand'-stone
re-sult'
wear'-ing
vil'-lag-es
drown'-ed
Eng'-land
Hol'-der-ness
York'-shire
Beach'-y
re-sist'
pic'-ture
sup-pose'
heap'-ing

1. Whilst they were at the seaside, Tom and his father were fond of walking along the coast in the cool of the evening; but they never got far from the town, because the coast bent in and out in large curves.

2. 'Why does the coast wind in and out like this?' asked Tom.

3. 'The sea is the cause of this winding coast,' said his father. 'It changes the shape of the land against which it flows, because the waves are ever at work slowly washing away the land.'

4. 'The sea has worn this part away more than that part over there,' said Tom, pointing to a small headland. 'How is that, father?'

5. 'The rate at which the sea wears away the land depends, among other things, upon the kind of land. The hard rocks wear away slowly; the soft rocks quickly.'

6. 'Then the land must be softer here than it is at the headland,' said Tom.

7. 'Look down at the beach,' said his father. 'What kind of beach is it?'

8. 'Sandy,' said Tom.

9. 'Just so. The sandstones are soft rocks, and they give way much more quickly before the waves and breakers than the harder rocks. The result is, that we get a winding coast with bays and capes.'

10. 'Do you mean to say that wherever the rocks are soft the coast is wearing away?'

11. 'Yes,' said his father. 'That is the case on the east coast of England. In some

places, houses, churches, and villages are now beneath the sea.'

12. 'Were the people drowned?' asked Tom, with a look of wonder in his eyes.

13. 'Oh dear no! All this waste of the coast goes on very slowly. The rocks are washed away bit by bit. At Holderness in Yorkshire the rocks are said to wear away from one to four feet each year, but that is much faster than in most places.'

A WINDING COAST. NEWQUAY, CORNWALL
(*From a Photo by* FRITH)

14. 'Does the sea wear away the hard rock also?'

15. 'Yes, but much more slowly. The hard rocks resist the sea for a much longer time, and very often stand out as bold headlands, like Beachy Head.'

16. 'I have seen a picture of it,' said Tom, 'in one of our school books.'

BEACHY HEAD

(*From a Photo by* VALENTINE)

17. 'On some coasts the rocks are so hard,' said his father, 'that we speak of them as being iron bound. Many of the rocks on the west coast of England are of this kind. Yet even these are wearing away slowly.'

18. 'I suppose that in time the sea will wear the country right away,' said Tom.

19. 'I do not think so. If the sea wears away the coast in some places, there are others in which it keeps heaping up the sand, and forming new land. Besides, as you know, the rivers help to make new land.'

LESSON 5

SHINGLE BEACHES

u'-su-al
e'-ven-ing
na'-ture
cov'-er-ed
un-der-stand'
peb'-bles
wear'-ing
check'-ing
pi'-ling
shin'-gle
point'-ed
al-though'
slow'-ly
for'-ward
forc'-ed
sev'-er-al

1. Tom and his father were taking their usual evening walk along the coast, and as they went on, the nature of the beach began to change. Near the town it was sand; now it was covered with small stones.

2. Tom still bore in his mind what his father had said about the coast a few evenings before, but he was not yet able to understand why there should be such a mass of pebbles on the beach. 'Is the sea wearing away the coast here, father?' he asked.

3. 'The sea is checking its own work here,' said his father. 'It has worn away the coast in the first case, as all these pebbles show, but now

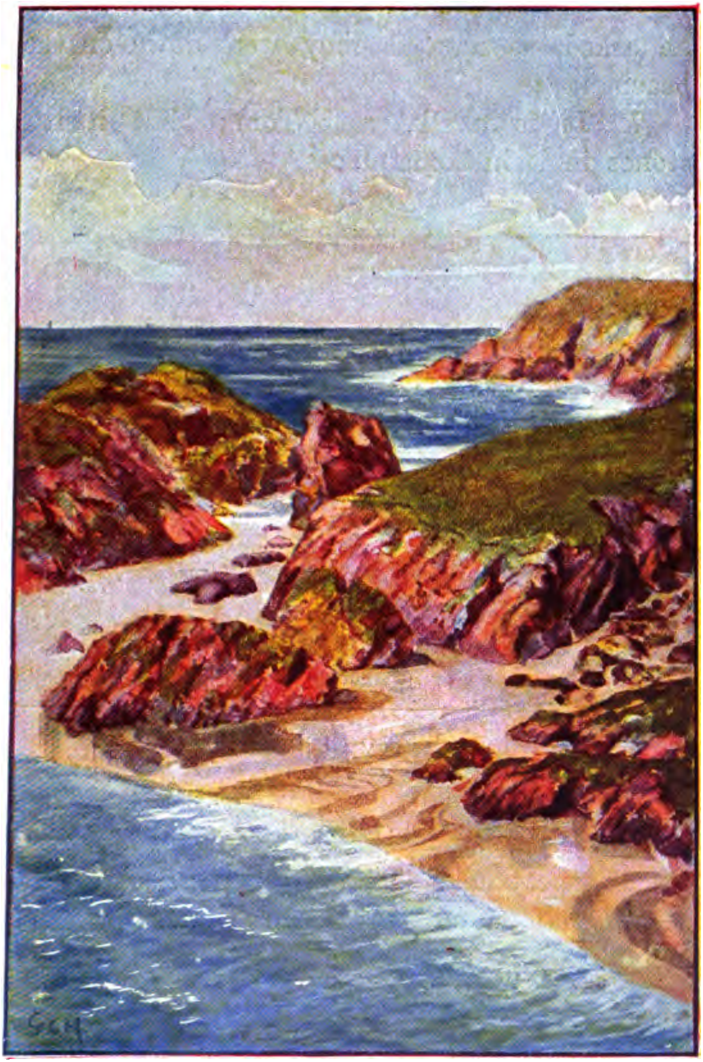
it is piling up these same stones as a check against itself. This shingle, as we call these stones, forms a small bank beyond high-water mark, as you can see.

A SHINGLE BEACH

4. 'The result now is, that this bank acts as a check to the waves, and saves the coast from further wear.'

5. 'But where do all the stones come from?'

6. His father pointed to the coast cliffs. 'Let us go down to the beach and look at the cliffs,' said he. 'What kind of cliff is it, Tom?'



A SCENE ON THE CORNISH COAST

he asked, as soon as they were down on the beach.

7. 'It is chalk,' said Tom; 'but it has stones in it in some places.'

A ROCKY COAST. CORNWALL

(*From a Photo by* FRITH)

8. 'Just so, and all these stones come out of the chalk. The waves wear away the softer chalk, and leave the stones on the shore.'

9. 'But the stones on the shore are smooth, whilst these in the chalk are not.'

10. 'That is the work of the waves also,'

said his father. 'The waves wash them to and fro, and so rub them one against the other. This wears the stones smaller and makes them smooth.'

11. 'Then the stones will wear out in time?'

12. 'Yes, they will wear out, although very slowly. They will become sand some day.'

13. 'But why should that bank of stones be formed there? It is out of the reach of the waves.'

14. 'When the wind blows hard and the waves are high, every wave washes up some of the sand or small stones on the beach.'

15. 'In the case of shingle beaches, the stones are forced forward as far as the waves can reach, and as they fall upon the beach, they knock others before them.'

16. 'I have seen the waves wash the little stones up the beach, myself,' said Tom.

17. 'It is in that way that the shingle is forced on the land beyond the reach of the waves, and beaches, in some cases, are thus formed into a bank several feet in height.'

LESSON 6

SANDY BEACHES

car′-ri-ed
cur′-rents
sup-pose′
dis′-tance
fer′-tile
a-mounts′
peb′-bles
shin′-gle
vil′-lag-es
cov′-er-ed
stop′-ping
grass′-es
shel′-ter
Nor′-folk
bar′-red
hun′-dreds

1. ‘Sandy beaches are formed in much the same way as shingle beaches, Tom,’ said his father.

2. ‘I thought as much,’ said Tom; ‘but if the waves can force the pebbles up the beach, they must be able to do much more with the sand, I should think.’

3. ‘The waves *do* force the sand upon the land,’ said his father; ‘but being much finer than shingle, sand can be carried away by the tides or currents, which cannot move the shingle.’

4. ‘Then since some of the sand is carried away into the sea, I suppose that is the reason the sand does not pile up in banks like the shingle?’

5. ‘It is one reason; but when the tide is low, or the sea calm, the sand is dried by the sun or wind, and blown to great distances. In this way, whole tracts of land which were

once fertile have been changed into sandy wastes.

6. 'The sand may be blown away in such large amounts as to form hills, which are known as dunes. There are dunes on many parts of the coast.'

A SANDY BEACH

7. 'The sand seems to do much harm in some places,' said Tom.

8. 'Very much. If the sand is loose, it is driven farther and farther on to the land. In this way whole villages have been covered, and other villages still run the same risk.'

9. 'Why do they not build a wall and stop the sand?'

10. His father smiled. 'I am afraid the wall would often have to be very long and very high,' he said. 'Yet still, they do try to stop the sand in many places by planting trees. These trees break the force of the wind, so that it does not blow the sand about so much.'

DUNES OR SAND HILLS

11. 'The trees would be much nicer than the wall,' said Tom.

12. 'Very much nicer. There is another way of stopping the sand, however. Grasses or weeds are sown in it, and these bind the

sand into a close mass, so that it does not blow away. In some places, sand dunes have been turned into grass lands in this way.'

13. 'Sand dunes are sometimes of use then?' said Tom.

14. 'Yes,' said his father. 'They shelter the land for a time. On the Norfolk coast they have barred up two or three small openings of the sea, and so have kept the tide out for hundreds of years.'

LESSON 7

THE WAVES ON THE SEASHORE

rest'-less	**yel'-low**	**nois'-y**	**high'-er**
reach'-ed	**re-ply'**	**sand'-y**	**school**

1. Roll on, roll on, you restless waves,
   That toss about and roar!
Why do you all run back again
   When you have reached the shore?

2. Roll on, roll on, you noisy waves,
   Roll higher up the strand!
How is it that you cannot pass
   That line of yellow sand?

3. Make haste, or else the tide will turn;
   Make haste, you noisy sea;
Roll quite across the bank, and then
   Far out across the lea!

4. 'We must not dare,' the waves reply,
'That line of yellow sand
Is laid along the shore to bound
The waters and the land.

5. 'And all shall keep to time and place,
And all shall keep to rule,
Both waves upon the sandy shore
And little boys at school.'

Aunt Effie's Rhymes.

LESSON 8

IN THE STRAITS

par'-ents
ho'-li-day
e-nough'
drown'-ed
por'-tions
min'-ute
plu'-ral
pres'-ent
Men'-ai (pron. **men'-ny**)
twen'-ty
chan'-nel
broad'-er

1. Jack Lazy had been with his parents to Wales for his holiday. Mrs. Lazy thought she

was not strong enough to do any walking, and so Jack had had plenty of riding. He told the other boys it had been a fine holiday.

2. Jack told them, among other things, how he and his friends had tried to cross the Straits in a boat, and how a storm of rain and wind came on and nearly drowned them. 'We all gave ourselves up for lost,' said Jack.

THE MENAI STRAITS
(*From a Photo by* VALENTINE)

3. 'Well, I am glad you were not drowned,' said Willy Late; 'but what are Straits?'

4. 'I don't know,' said Jack; 'ask Fred.'

5. 'A strait is a narrow neck of water which joins two larger portions of water together,' said Fred. 'Wait a minute, boys; I will show you some straits.'

6. Fred took out an atlas from his school

bag, and opened it at the map of England. He then showed them the Menai Straits, which Jack had tried to cross in a boat. He also pointed out the Straits of Dover.

7. 'There is only one piece of water in each case,' said one of the boys. 'Why do you say straits?'

8. 'I used to wonder myself once,' said Fred. 'The word "Straits" means narrow, but it is always used in the plural, because the idea of two banks, or sides, is always present to the mind.'

9 'I do not know what you mean,' said Jack Lazy.

10. 'Well,' said Fred, 'as soon as you

think of a narrow piece of water, you at once think also of the banks on each side. In some places straits are called "narrows."'

11. 'Why, the Straits of Dover are twenty-one miles across,' said Tom. 'I have heard father say so, because he has to go to France every year. Anything so many miles wide can hardly be called narrow.'

12. 'And yet they are sometimes called narrows,' said Fred, 'because they are always so much narrower than the bodies of water they join.'

13. 'Here are some more straits,' said Fred, pointing to the English Channel. 'A channel is only a larger and broader strait. You can see that from the way in which it joins two larger portions of water together.'

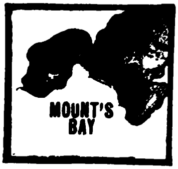
LESSON 9

A SAIL IN THE BAY

sup-pose′
sail′-ors
hun′-gry
ex-pect′
Car-nar′-vón
Mil′-ford
Ha′-ven
Ports′-mouth
nar′-rōw
en′-trance
else-where′
win′-dow
add′-ed
re′-al-ly
safe′-ty
har′-bours

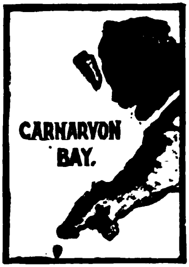
1. 'I suppose you kept off the water after your little trip on the Straits, Jack?' said Fred Keen.

2. 'No,' said Jack. 'Mother could not walk, and so, as we are all good sailors, we were often on the sea. We used to go out in a yacht and sail about the bay, and when it did not rain it was very nice, because there was nothing to do and it made you very hungry.'



3. 'Which bay did you sail about?' asked Fred Keen.

4. 'I don't know,' said Jack. 'Father did say what the name was, but it was so long and hard that I forget it.'



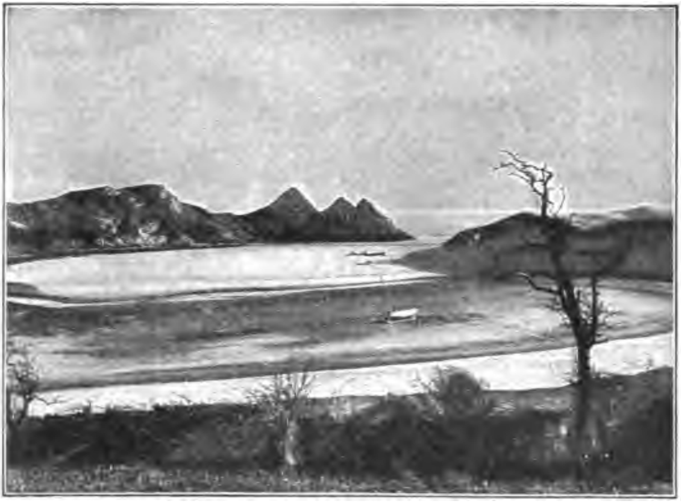
5. 'It was Carnarvon Bay, I expect,' said Fred, who pointed out that bay on the map.

6. 'What is a bay, Jack?' asked Willy Late.

7. 'It is water, and there is some land. The land is not on each side like the straits. A bay is large and wide. It is not narrow like the straits.' Jack could not define a bay, and so said, 'Ask Fred, he is sure to know.'

8. 'A bay is a deep, wide bend of the sea into the shore,' said Fred. 'It does not run far into the coast, and, as a rule, it is wider at the entrance than elsewhere.'

9. ‘It is something like a bay window,’ added Fred. ‘There is often a cape at each end, and in such cases you might call a bay a part of the sea lying in a bend of the coast between two capes.’



A BAY: THREE CLIFFS BAY, S. WALES
(*From a Photo by* H. A. CHAPMAN)

10. ‘Show us another bay on the map,’ said one of the boys. Fred at once pointed out Mount’s Bay with its cape at each end.

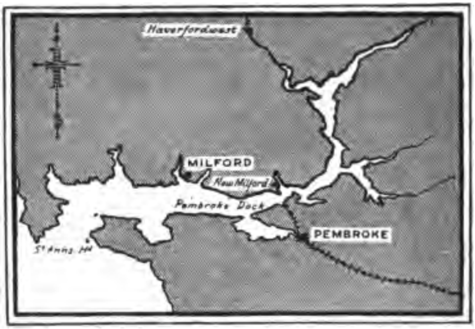
11. ‘I see that there are many bays on the map,’ said Tom.

12. ‘Yes,’ said Fred, opening his atlas at the map of Scotland. ‘But look at these

narrow inlets of water which run a long way into the land!

13. 'They are not bays,' said Tom, 'for each has a narrow entrance, and they are not wide.'

14. 'They are gulfs, really,' said Fred, 'although in Scotland they are called Lochs.'



15. 'When we were in South Wales we went for a sail up Milford Haven,' said Jack; 'and that is long and narrow like these lochs.'

16. 'Then you really sailed up a gulf?' said Fred, 'for it is a long, narrow inlet of the sea into the land.'

17. 'Then why is it called a haven?'

18. 'Because it is a place of rest and safety for ships,' said Fred. 'As a rule, these inlets

of the sea, where ships rest, are called harbours,' added Fred,* who at once pointed out Portsmouth Harbour on the map.

LESSON 10

STRANGE FANCIES

ho'-li-days
stee'-ple
pic'-ture
jut'-ting
East'-bourne
Beach'-y
Eng'-land
stretch'-es
won'-der
at'-las
min'-ute
o'-pen-ed
show'-ed
wear'-ing
ac'-tion
sail'-ors

1. 'Where did you go for your holidays?' asked Tom of another boy.

2. 'Eastbourne,' said the boy. 'It is a nice place, and there is a fine walk to the top of Beachy Head,† which is two or three times as high as our church steeple, I should think. When you are at the top, you can see a long way out to sea on a clear day.'

3. 'There is a picture of Beachy Head in one of our reading books,' said Tom. 'It is a cape, is it not, Fred?'

4. 'Yes,' said Fred. 'It is a piece of land jutting out into the sea.'

5. 'Why do they call it a head, Fred?' asked Willy Late.

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* See Frontispiece.

† See p. 16.

6. ‘I do not know,’ said Fred, ‘unless it is because it is a very high cape. I know that Mr. Stevens once told our class that, as a rule, the heads were our highest capes, and among others he named Beachy Head.’

7. ‘I often wonder why some are so much higher than others,’ said Tom.

8. ‘If you look at the map of England,’ said Fred, ‘you will find that these “heads” are often the ends of ranges of hills.’

9. Tom’s atlas was out of his bag in a moment, and opened at the map of England. Fred Keen then showed him how the South Downs ended in Beachy Head.

10. ‘These hills are formed of harder rocks than the plains, so that the capes or heads which they form are higher than the other parts of the coast near them,’ said Fred.

11. ‘Why?’ asked one of the boys.

12. ‘Because they can better stand against the wearing action of the waves,’ said Fred.

13. ‘But why should they be called heads or capes at all, Fred?’ asked Tom.

14. ‘Mr. Stevens said that when you are at sea, but within sight of the coast, very often some piece of land, which stretches out into the sea, looks like a great beast lying down, with its head towards the sea.’

15. ‘What a strange fancy!’ said Tom.

16. ‘Very strange,’ said Fred; ‘but it was the fancy of sailors in days gone by, and their heads were often full of fancies.’

LESSON 11

MORE STRANGE FANCIES

fan′-cies
dare-say′
main′-land
laugh′-ed
sure′-ly
sand′-stone
i-de′-a
hun′-dred
Tor-bay′
Liv′-er-pool
Es′-sex
Dun-ge-ness′
pi′-rates
sail′-ors
ex-plain′
nar′-row
stretch′-es
ex-am′-ple
Port′-land
Liz′-ard

1. ‘I daresay you know that capes are also known by other names,’ said Fred; ‘but in all the names, you will find the one common idea of a something which juts out, or sticks out from the mainland.’

2. ‘Our heads jut out from our bodies, it is true,’ said Tom.

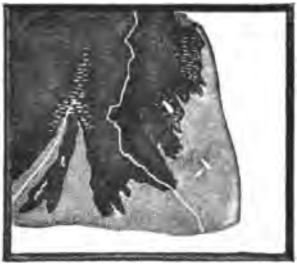
3. ‘And our noses jut out from our faces,’ said Fred. The boys all laughed at this, but Fred said, ‘I am not trying to be funny.’

4. ‘But surely you do not mean to say any capes are called noses?’

5. ‘I do,’ said Fred. ‘Near Torbay is a cape called Hope’s Nose. Again, near Liver-

pool there are some jutting rocks of red sandstone called the Red Noses, and another of yellow sandstone called the Yellow Nose.'

6. A bright idea struck Tom. 'Is nose anything to do with Naze or Ness, Fred?' he asked.



DUNGENESS

7. 'Naze means the same as nose,' said Fred. 'Many hundreds of years ago a race of bold and hardy men, many of whom were pirates, came from over the sea, and landed on our coast.'

8. 'You mean the Danes, do you not, Fred?' asked one of the boys.

FOULNESS

9. 'Yes,' said Fred. 'They were sailors, and must have had the same fancies as other sailors, for they brought the word "Naze" with them. You know, perhaps, that there is a cape in Essex called the Naze.'

10. 'What does the word "ness" mean?'

11. 'Naze, ness, and nose all have the same meaning,' said Fred. 'The word "naze"

has been changed into "ness" where it comes at the end of a word. Thus we find Foulness in Essex, and Dungeness in Kent.'

12. 'I suppose these fancies will explain why some capes are also called bills?' said Tom.

PORTLAND BILL

13. 'They may do so,' said Fred. 'A long narrow ridge of land which stretches into the sea might well, in fancy, be thought to be something like a bird's bill. Here is a good example,' he added, pointing out Portland Bill.

14. 'When I was out in the yacht,' said Jack, 'the capes looked like a mere point to me.'

15. 'Some of the capes do look like mere points,' said Fred, 'and for that reason they are called Points. Here are two cases,' he added, putting his finger on Start Point and the Lizard.

START POINT

16. 'Well, I did not know that the many words for a cape were mixed up with such strange fancies,' said Tom. 'It is very nice to know of these fancies,

although they may not all be quite true.' And the boys all agreed with him.

THE LIZARD, SHOWING LIGHTHOUSE
(From a Photo by VALENTINE)

LESSON 12

ISLAND, MAINLAND, AND CONTINENT

is'-land
main'-land
con'-ti-nent
reach'-ed
at'-las
o'-pen-ed
Eu'-rope
Brit'-ish
point'-ed
put'-ting
fing'-er
to-geth'-er

1. One day Tom and his father went for a row on a lake, and after a time they landed on a little island that stood in the middle of it.

‘We will rest here a short time,’ said his father; ‘it is a pretty little island.’

2. ‘Why do you call it an island, father? It is only a piece of land with water all round it.’

3. ‘Well, that is what most people call an island. I always think that the mainland looks so pretty from this spot.’

4. ‘Mainland,’ said Tom, ‘what is that?’

5. ‘The land round the lake. We call it the mainland to mark it out from this island.’

6. When they reached home Tom said, ‘Are we on the mainland now, father?’

7. ‘Yes. We are on both the mainland and an island.’

8. ‘But how can we be on both at the same time?’

9. ‘I can show you this by a map. Run to the study and get your atlas.’

10. The atlas was opened at the map of Europe, and the British Isles* were pointed

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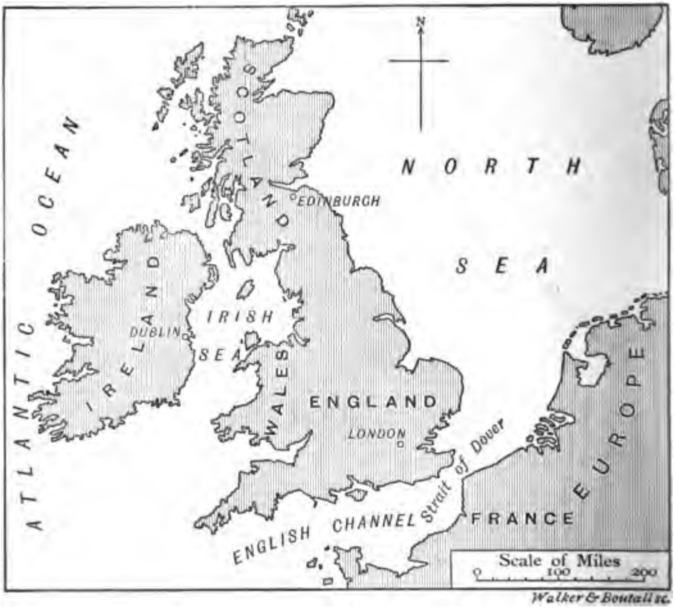
* See p. 40.

out. ‘There is England,’ said his father, ‘and you can see that it is the mainland to these small islands round its coast.

11. ‘Now look at the British Isles, and all this great mass of land which we call a continent,’ said he, putting his finger on the continent of Europe. ‘Europe is the mainland to the British Isles.’



Walker & Boutall sc.

12. ‘What do you mean by a continent?’

13. ‘A continent is one of the largest pieces of land. The word “continent” means land

GRASMERE: A LAKE SCENE

holding together; that is, land which is not cut up into parts by the sea.'

14. The atlas was then opened at the map of the World. 'Let us pick out the continents,'* said his father.

15. 'The water is all round the continents,' said Tom; 'they are only big islands, after all.'

16. 'But they are not called islands, because there is no other land to be a mainland to them.'

17. Tom now saw that an island was not only a portion of land with water all round it, but that, as a rule, it had a larger portion of land lying near, which was called its mainland.

LESSON 13

PENINSULA AND ISTHMUS

pen-in'-su-la
isth'-mus
ship'-wreck
in'-ter-est
pitch'-ed
storm'-y
is'-land
teach'-er
Corn'-wall
Liz'-ard
pick'-ed
ex-cept'
nar'-row
main' land
ques'-tion
por'-tion

1. The boys were in school, and the class was having a reading lesson. The story was

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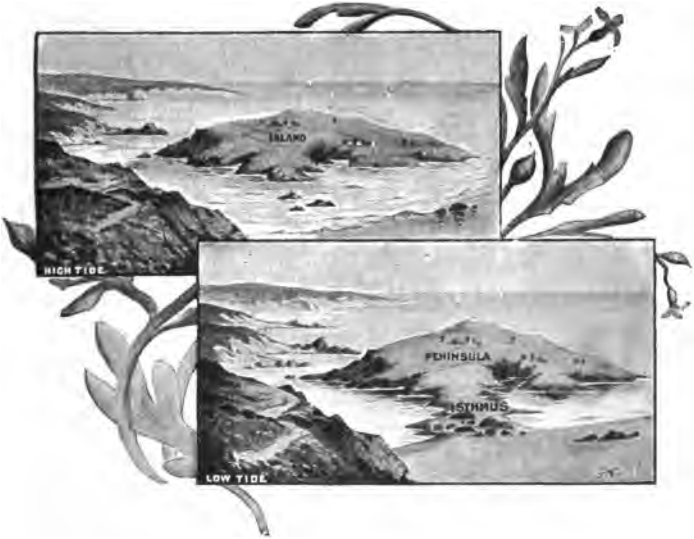
* See pp. 10 and 11.

one of a shipwreck, and was full of interest to them.

2. When the ship went to pieces, two men clung to a piece of a mast. For two or three hours they pitched about in a stormy sea, and at last were flung up on the shore more dead than alive.

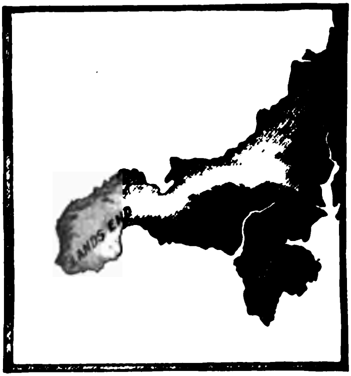


3. The land was a strange one to the men, and as soon as they were able, they began to search for food and water. In this way they found out that they had been cast by the sea on to a peninsula.

4. 'What is a peninsula, sir?' asked one of the boys.

5. 'A peninsula is almost an island,' said his teacher. 'It has water very nearly all round it.' He then pointed out Cornwall on the map which hung on the wall in front of the class. 'There is a peninsula,' he said.

6. He next pointed to the piece of land of which the Lizard was a cape, and asked the boys to note that the water was nearly all round it. The boys were then asked to point out another peninsula near it.



7. Tom's sharp eyes soon picked out the piece of land which had the Land's End for a point, and which also had water nearly all round it. Another boy said England itself was a peninsula.

8. 'You are all right,' said the teacher. 'All those pieces of land which you have named are peninsulas.'

9. 'But the water is all round my piece of land,' said Tom, 'except a narrow little portion. It is more nearly an island than Cornwall.'

10. 'They are both peninsulas,' said his teacher. 'Your peninsula is joined to the mainland by an isthmus, while Cornwall is a peninsula with a broad base.'

11. 'What is an isthmus, sir?' asked one of the boys.

12. 'The narrow neck of land by which a peninsula is joined to the mainland,' said his teacher.

13. 'Then those peninsulas which are joined to the mainland by a broad base do not have an isthmus?' said Tom.

14 'No,' said his teacher. 'Cornwall is not said to be joined to the rest of England by an isthmus, because its base is too broad. It is the narrow bases only which are called isthmuses.'

15. 'I should like to ask you one more question,' said the teacher. 'Let us take a peninsula joined to the mainland by an isthmus, and let us suppose that the land became water, and the water land. What would the peninsula and isthmus become then?'

16. 'The peninsula would become a sea, because it would be a piece of water with land nearly all round it,' said one of the boys.

17. 'And the isthmus would become a

strait,' said Tom; 'because it would be a narrow neck of water joining two larger portions.'

LESSON 14

HILLS AND MOUNTAINS

climb′-ed
reach′-ed
sum′-mit
en-joy′-ing
mount′-ain
mount′-ain-ous
per-haps′
cloth′-ing
dis-ap-pears′
re-mains′
chief′-ly
sce′-ne-ry
im-ag′-ine
ho′-li-days
beau′-ti-ful
e-nough′

1. 'You all know what a hill is. A good many of you have climbed one. You have started from the bottom or base of the hill, and have walked up the sides or slope. At last, you have reached the summit or top, and have been glad to take a long rest, while enjoying the cool air and the pretty view.

2. 'There are hills in many parts of England. The Downs in the south-east are well-known ranges of chalk hills.

3. 'Not many of you have seen a mountain, so you must try to imagine what a mountain is like.

4. 'It takes, perhaps, a quarter of an hour to get to the top of the hill which you know. To get to the summit of a mountain would take much longer than that. Snowdon,

the highest mountain in England and Wales, can be climbed in about three or four hours. It takes more than a day to climb some mountains. Some of the highest mountains in the world have never been climbed at all.

5. 'On a dull day, you have perhaps seen a cloud resting on the top of a hill. Clouds often rest on the tops of mountains even on the finest days in summer. Sometimes clouds rest on the sides, and the tops of the mountains may be seen above the clouds.

MOUNTAINOUS COUNTRY

6. 'In winter, snow sometimes falls on hill and valley, clothing everything in a beautiful white dress. When the sun comes out, the snow in the valley melts first. Next the snow on the sides of the hill disappears, but the snow on the hill-top often remains for some time.

SNOWDON
(*From a Photo by* VALENTINE)

7. 'Some mountains are so high that snow remains on their summits all the year through. No mountain in England is high enough to have snow on it for the whole of the year.

8. 'The tops of many of the mountains in Switzerland are always covered with snow. Many English people go there in the summer

time, and spend their holidays in climbing the snow-clad mountains.

9. A mountainous country is always more beautiful than a flat one, and North Wales and the Lake District are well known for their fine scenery.'

LESSON 15

THE LITTLE VALLEY

charm′-ing
val′-ley
gai′-ly
spread′-ing
treas′-ures
pleas′-ures
in′-no-cent
tran′-quil
fra′-grant
twin′-ing
friend′-ship
dai′-ly
se′-rene
em′-blem
heav′-en
bow′-ers

1. Charming little valley,
Smiling all so gaily,
Like an angel's brow;
Spreading out thy treasures,
Calling us to pleasures
Innocent as thou.

2. Skies are bright above thee,
Peace and quiet love thee,
Tranquil little dell;
In thy fragrant bowers
Twining wreaths of flowers,
Love and friendship dwell.

3. May our spirits daily
Be like thee, sweet valley,
Tranquil and serene;
Emblem to us given
Of the vales of heaven,
Ever bright and green.

From the German.

LESSON 16

MORE ABOUT HIGHLANDS

hill′-y
back′-bone
ar-rang′-ed
mount′-ains
al-though′
point′-ing
Switz′-er-land
Pen′-nine
Dart′-moor

1. One day the teacher brought before the class a fine large model on a board. Some of the boys knew that it was a model of England.

2. The teacher said, ‘I want you to find out the hilly and the flat parts of England.’* The boys saw that the hilly parts were in the west, while the centre and east of England were more or less flat.

3. They could see very clearly a line of mountains, which looked like the backbone of

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* See Relief Map on p. 134.

the model, and they learned that such a line of mountains was called a ‘range’ or ‘chain.’ They were told that this range of mountains was called the Pennine Chain.

4. Some mountains to the north-west of the Pennine Chain were not arranged in a line, but were crowded together in what was called a ‘group of mountains.’

A RANGE OF MOUNTAINS

5. The boys saw that the rivers flowed east and west from the Pennine Chain, and that none of them flowed over the mountains. The teacher told them that the high land which

SNOW-COVERED MOUNTAINS

divided one set of rivers from another set of rivers was called a water-parting.

6. The top of a roof of a house is like a water-parting. The rain falls on the top of the roof. Some of it runs down the front slope of the roof towards the front of the house, and some of it runs down the back slope of the roof towards the back of the house. The slope down which the water flows is the water-shed.

7. The rain which falls on the top of the Pennine Chain does much the same. Some flows down the eastern slope, and helps to form the rivers which flow into the North Sea. Some of the rain flows down the western slope, and helps to form the rivers flowing down into the Irish Sea.

8. 'If I wanted to get from one side of the mountains to the other, should I have to climb right to the top of the mountains?' asked one of the boys.

'No,' said the teacher. 'In every range of mountains there are a few gaps where the land, although rather high, is not so high as the tops of the mountains. These gaps are called passes.'

9. 'There is some high land,' said Tom, pointing to the model, 'which does not rise into a peak like the rest. It is quite flat on the top,

and looks something like a very large mountain with its top cut off.'

A SWISS PASS
(*From a Photo by* FRITH)

'Yes,' said the teacher, 'that is a very high plain or tableland. The tableland at which you are pointing is called Dartmoor.'

LESSON 17

OVER THE PLAINS

cy′-cle
flat′-test
lev′-el
ta′-ble-land
Stam′-ford
East′-ern
Es′-sex
Suf′-folk
rid′-den
Nor′-folk
coun′-try
sup-pose′
in′-ter-est
farm′-ing
high′-lands
low′-lands

1. One wet summer's evening there was a rat-tat at the door, and shortly afterwards the maid brought a letter into the room.

2. Tom's father opened the letter and read it. 'It is from your Uncle George,' he said. 'He and a few friends are riding from place to place on their cycles, and it seems that they are having a very fine time of it.'

3. 'Where is Uncle now?' asked Mary.

'He is in the Fens,' said her father. 'This letter was posted at Stamford, I see.'

4. 'What are the Fens?' asked Tom.

'The Fens is the name given to the flattest part of England,' said his father. 'It is the most level plain in the country.'

5. 'What is a plain, father?' asked Mary.

'A large piece of flat, low ground is called a plain. The word "plain" means smooth or easy, and so when the land is level and easy to walk over, we call it a plain.'

'But I thought all pieces of flat ground were called plains,' said Tom.

6. 'Not all,' said his father. 'You may have a large piece of flat, or fairly flat ground which lies high, and stands above the ground like a table stands above the floor. Such a piece of level ground we should call a tableland, and not a plain.'

A PLAIN

7. 'Then a stretch of high level land is a tableland, and a stretch of low level ground is a plain,' said Tom.

8. 'Yes, I think that is what we should call them, as a rule.'

9. 'Where had Uncle been before he went to the Fens, father?' asked Mary.

10. 'Let me see,' said her father, turning to the letter again. 'He and his friends spent a week riding about the Eastern Plain. They have ridden through Essex, Suffolk, and Norfolk.'

11. 'Uncle seems to be keeping to the flat parts of the country,' said Tom. 'I suppose he and his friends do not like riding hills.'

12. 'That may be the reason, but he also takes a great interest in farming, and some of the best land in the country is found in this plain.'

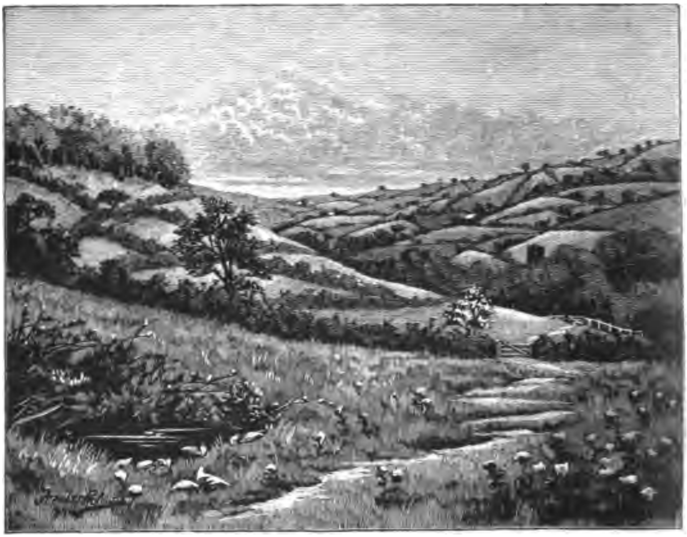
13. 'Well, I should like to go to the highlands when I go on a tour,' said Tom. 'I should not care to keep to the lowlands, like Uncle. It is so nice to put your feet on the foot-rests, and let the cycle run down a long hill.'

14. 'What do you mean by highlands and lowlands?' asked Mary.

15. 'By the highlands we mean the hilly parts of the country; and by the lowlands, the plains,' said Tom.

16. 'Not quite,' said his father. 'Lowlands

do not mean quite the same as a plain. Land may lie low, and yet rise and fall in gentle hills, as you may see in the picture on this page. To be a plain, the land must be fairly level as well as low.'



UNDULATING COUNTRY

LESSON 18

THE RIVER

spark'-le
yel'-low
peb'-bles
fo-'li-age
swell'-ing
brawl'-ing
leap'-ing
sweep'-ing
brim'-ming
mo'-tion
mor'-tal
chan'-nel
ar'-row
nar'-row
through
e-ter'-ni-ty

1. River! River! little River!
Bright you sparkle on your way,
O'er the yellow pebbles dancing,
Through the flowers and foliage dancing,
Like a child at play.

2. River! River! swelling River!
On you rush o'er rough and smooth—
Louder, faster, brawling, leaping
Over rocks by rose-banks sweeping,
Like to hasty youth.

3. River! River! brimming River!
Broad and deep and still as Time,
Seeming still—yet still in motion,
Tending onward to the ocean,
Just like mortal prime.

4. River! River! rapid River!
Swifter now you slip away,
Swift and silent as an arrow,
Through a channel dark and narrow,
Like life's closing day.

5. River! River! headlong River!
Down you dash into the sea;
Sea, that line hath never sounded,
Sea, that ship hath never rounded,
Like eternity.

MRS. SOUTHEY.

LESSON 19

ON THE RIVER

PART I

e′-ven-ing
drift′-ing
id′-ly
gaz′-ing
float′-ed
to′-wards
think′-ing
rea′-son
u-nite′
coun′-try
add′-ed
dis′-tance
feed′-er
trib′-u-ta-ry
un-der-stand′
mean′-ing

1. One warm summer's evening, Tom and his father were drifting idly in a boat on the river which ran through the town.

2. Tom was gazing at the river for lack of something else to do, when a cork floated by the boat and took its way on to the town. The cork set Tom thinking.

3. 'How is it that everything floats towards the town, father? The cork is drifting towards the town, and our boat would drift the same way. It never drifts the other way.'

4. 'The cork and the boat float with the

stream,' said his father. 'The river always flows one way, and that is through the town towards the sea. The reason is that, as a rule, a river rises in the form of a spring in some hill or high ground. These springs flow out of the sides of the hills,* and run down their slopes in small streams.

SCENE ON THE THAMES. CLIVEDEN
(*From a Photo by* FRITH)

5. 'It may seem strange to you that so much water can come from such small springs, but the streams from other springs unite and join with the first one to make a river.

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* See p. 70.

6. 'It is true there are no hills here, and that the country all around is very flat. But this river has its source many miles away, and, like most other rivers, it rises in a hill.

7. 'Now let me try to help you to understand this,' added his father. 'When you let your hoop run down a hill, it does not stop at

the bottom, but runs on for some distance along the flat ground. The case is just the same with the river.'

8. 'The river flows slowly here, because its source is not very high and it has to flow over a great deal of flat land. This stream is only a feeder or tributary, but the main stream flows faster.'

SCENE ON THE THAMES. TAPLOW WOODS

(*From a Photo by* FRITH)

9. 'When one river flows into another, it is said to be a feeder or tributary of that river,' said his father, who saw that Tom did not understand the meaning of these words. 'The

main stream is the chief stream, and in this case it flows into the sea.'

10. Tom also learned from his father that the lower end of a river where it enters the sea, is called its mouth.

LESSON 20

ON THE RIVER

Part II

moor'-ed
be-neath'
hap'-pens
pock'-et
chat'-ted
learn'-ed
feed'-ers
flow'-ing
float'-ing
fa'-mous
sys'-tem
ba'-sin
un-der-stand'
drain'-ed
tric'-kles
fer'-tile

1. 'Come, Tom, take a scull, and we will turn the boat round, and row up the river a little way. We can then moor the boat in the shade of those bushes on the right bank.'

2. The boat was soon moored beneath the shade of the bushes, which Tom found to be on his left hand. 'Did you not say this was the right bank, father?' he asked.

3. 'A bank is not right or left because your right or left hand happens to be nearest to it. If you start from the source, and row along the course of the river to its mouth, the left bank is on your left hand, and the right bank is on

your right. These are always the left and right banks, whichever way the boat is going.'

4. Tom and his father chatted about rivers for some little time longer, and Tom learned that there were many other feeders flowing into the main stream besides the one on which their boat was floating.

5. His father told him that the main stream was called the Thames, and that it was a very famous river. He also learned that the river system of the Thames was a large one.

6. 'What is a river system, father?' he asked.

7. He was told that by a river system is meant the main stream and all its feeders, and that these many streams made the basin of the Thames a large one.

8. It was plain that Tom did not understand what was meant by a river basin, so his father tried to make the whole thing clear to him.

9. 'A river basin is the land drained by a river system,' said his father. 'The land through which a river flows is said to be drained by that river.'

10. 'The rain which soaks into the soil on either side of the river trickles through the ground into the river. The soil is thus kept fairly dry and is made more fertile.'

11. Just then there was a splash and a cry. Tom had dropped his pocket knife into the river.

12. 'I am afraid you will never see that again,' said his father, 'for the bed of the river is very muddy here.'

13. His knife had gone to the bottom of the river. It had found a bed, from which, perhaps, it would never rise again.

LESSON 21

THE WORK OF A RIVER

ca-nal'
chan'-nel
ques'-tion
show'-er
gut'-ter
wind'-ing
eas'-i-er
eas'-i-ly
rea'-son
de-pends'
rush'-es
car'-ries
straight
wash'-ed
grav'-el
un-der-stand'

1. 'I think we will go on the river again to-night,' said Tom's father. 'Bring Mary with you, and I will take you both for a row.'

2. They were soon beyond the reach of the town. The sun was getting low in the sky, and the air was sweet and cool after the heat of the day.

3. 'Why does the river wind in and out so?' asked Tom. 'Why does it not flow in a straight line like the canal?'

4. 'Well, the canal was dug out by men, who made it straight,' said his father; 'but the river dug out its own channel.

5. 'Let me ask you one question,' said his father. 'After a shower of rain, do the little streams, which you see in the road, all flow in straight lines to the gutters?'

THE MIDDLE COURSE OF A RIVER

6. 'No, father, they do not.'

7. 'I will tell you why, my boy. The road is made up of flint stones. The spaces between the stones are filled with the dust which is worn off these flints.

8. 'The stream meets a flint which is hard and blocks the way; so the water turns on one side, and flows over the softer ground, winding about sometimes, until it finds its way into the gutter.

9. 'The river does much the same thing. It turns aside from the harder ground to find an easier way.

10. 'But that is not the whole reason. A river will wear its way through most things that block its course, but it depends also upon the rate at which the river flows. The faster it flows, the more ground it wears away.'

11. 'Then a river must wear away a great deal of ground when it rushes down a hill,' said Tom.

12. 'Yes, it wears away the soil over which it passes,' said his father. 'In the hills, where it rises, it flows fast, and carries down stones and the small grains which have been worn away from the rocks.

13. 'A river flows very slowly over the flat ground. There is then much more water in it, and this water makes its own channel deeper with the help of those stones and bits of rock which it washed away in the upper part of its course.

14. ‘ Some kinds of soil are worn away more quickly than others. Fine sand is washed away more easily than gravel, and gravel more easily than large stones.’

15. ‘I think I understand now why a river does not always flow in a straight line,’ said Tom.

LESSON 22

A CHAT ABOUT SPRINGS

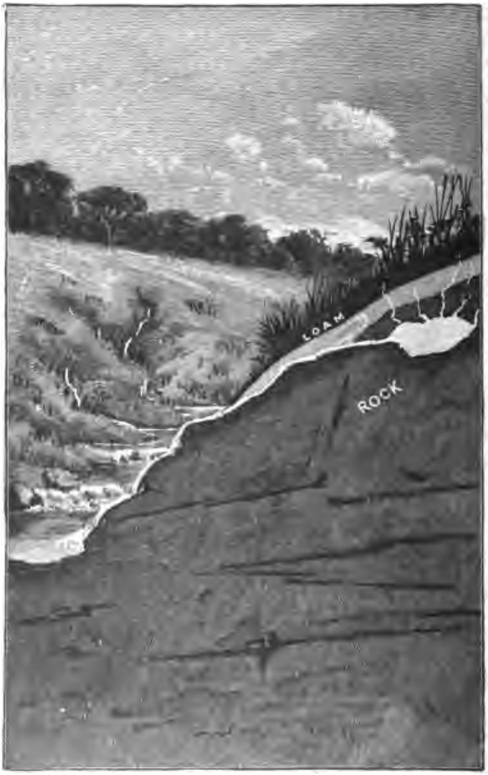
slow'-ly
sink' ing
col-lect'
hap'-pens
rare'-ly
sup-ply'
coun'-tries
plen'-ty
fro'-zen
e-nough'
glac'-i-ers
mount'-ains
re-mark'
per-haps'
Sev'-ern
through

1. ‘The other day,’ said Tom to his father, ‘you told me that rivers very often rise in springs of water. Where does the water come from ? ’

2. ‘ A great deal of rain falls each year, and some of it soaks into the ground. It slowly makes its way through the soil, and sinks very often through the loose rock which lies below the soil.’

3. ‘Does it sink far ? ’

‘It keeps sinking until it meets with clay, or some kind of rock through which it cannot force its way.



SECTION OF A HILLSIDE: TO SHOW HOW SPRINGS AND RILLS ARE CAUSED

‘It then begins to collect, and to wear its way out of the ground as a spring.’

4. ‘ But what happens when all that water runs away ? ’

A SPRING ISSUING FROM A HILLSIDE

5. ‘ It very rarely runs all away. Fresh rain falls from time to time, and so the supply

of water is kept up. Most springs flow so slowly that the supply of water lasts from one rainy day to another.'

6. 'But if there should be no rain for a long time, would the springs run dry then?'

7. 'Well, after many weeks of dry weather the springs often yield less and less water, and may, in some cases, stop flowing.'

8. 'In that case might not the river dry up?'

9. 'It might,' said his father, 'and streams do dry up in some hot countries in the summer. But there is no fear of that in a country where plenty of rain falls each year.'

10. 'But what about cold countries?' asked Tom. 'Mr. Stevens once told us that the ground is frozen hard for months in the winter.'

11. 'In such lands there must be plenty of rain before the frost comes. The springs then have enough water to flow all the winter. Besides, in cold countries the rivers often rise in glaciers, about which you will learn something at another time.'

12. 'Are there any springs about here, father? If so, I should like to go and see them.'

13. 'I do not think so; the land about here is very flat, and most of the water finds its way

into the river, or into the little streams that flow into the river. But there are springs to be found on many hills or mountains.'

14. 'Well, I am glad we have some hills in our country, for it seems to me that without them we should have no rivers.'

15. 'There is a great deal of truth in that remark of yours, Tom; but some rivers also rise in lakes, as is the case with the River Severn. It is true that lakes are found among hills, as a rule, and so, perhaps, you are not far from being right after all.

LESSON 23

LOOKING-GLASS RIVER

trav'-el
wim'-ple
bloss'-oms
pa'-ven
col'-our-ed
float'-ing
wrin'-kle
twin'-kle
dip'-ping
mar'-ten
plump'-ing
pur-sue'
pa'-ti-ence
min'-ute
spread'-ing
cir'-cles

1. Smooth it glides upon its travel,
  Here a wimple, there a gleam—
O the clean gravel!
  O the smooth stream!

2. Sailing blossoms, silver fishes,
  Paven pools as clear as air—
How a child wishes
  To live down there!

3. We can see our coloured faces
Floating on the shaken pool,
Down in the cool places,
Dim and very cool;

4. Till a wind or water wrinkle,
Dipping marten, plumping trout,
Spreads in a twinkle
And blots all out.

5. See the rings pursue each other;
All below grows black as night,
Just as if mother
Had blown out the light!

6. Patience, children, just a minute,
See the spreading circles die;
The stream and all in it
Will clear by-and-by.

ROBERT LOUIS STEVENSON.

LESSON 24

LANDSLIPS

land′-slip
news′-pa-per
hun′-dred
dread′-ful
si′-lence
mount′-ain
val′-ley
col-lects′
loos′-en
des-troy′-ing
vil′-lages
thou′-sand
coun′-try
Vent′-nor
pret′-ti-est
is′-land

1. 'I see there has been a bad landslip in the Alps,' said Tom's father, looking up from

his newspaper. ‘Five people and one hundred and fifty head of cattle have been killed.’

2. ‘How dreadful!’ said Tom’s mother.

A VILLAGE BEFORE A LANDSLIP

3. There was silence for a few moments, and then Tom’s voice was heard asking what a landslip was.

4. His father looked up from his paper, and said: ‘Sometimes large masses of soil and huge pieces of rock slip down the side of a mountain and fall into the valley below. In

other words, part of the land slips away and causes what is called a landslip.'

5. 'How is it that such masses of soil break away from the mountain side?'

6. 'You know how springs are formed,' said his father.

A VILLAGE AFTER A LANDSLIP

7. 'Yes,' said Tom. 'The water that sinks into the soil either collects in a hole, or forces its way out of the soil as a spring.'

8. 'That is right,' said his father. 'Now this water may so wear away the soil on which the rocks rest, that by sheer force of their

weight they may slip away into the valley below.'

9. 'That shows why the rocks fall, but it does not make it clear why large masses of soil fall also,' said Tom's mother.

10. 'The cause is much the same in each case. The water which soaks into the soil, and so creeps down the side of a hill under the ground, may so loosen the soil that some of it gives way. Besides, as soon as rocks and soil begin to slide down a hill, they tear up and carry with them fresh rocks and fresh soil.'

11. 'Then the landslip grows larger as it rolls down the mountain side,' said Tom. 'I should not care to be in the way of one.'

12. 'They are a source of great danger to people living in the valleys,' said his father. 'This is a bad case we have just read about, but I have heard of worse.

13. 'Once a mass of rock slid down and killed eight hundred people, besides destroying their villages. At another time a whole town and more than two thousand people were destroyed.'

14. 'I am glad we do not have any landslips in our country,' said Tom.

15. 'But we do have landslips, though they are very small ones. They are rather

common in the Isle of Wight, and in some other parts of the country. The walk through the Landslip, a mile or two outside Ventnor, is one of the prettiest walks in the island.'

LESSON 25

A GLACIER

fro'-zen
glac'-i-er
val'-ley
mo-raine'
ow'-ing
slip'-ped
sur-pris'-ed
beau'-ti-ful-ly
dan'-ger-ous
rub'-bish
col-lect'
chief'-ly

1. The pond near Tom's house was frozen over last winter. Tom had heard his father speak about glaciers, and he knew that a glacier was made of ice. So Tom asked his father whether the ice on the pond was anything like a glacier.

'Not very much,' said his father. 'I will tell you about a visit I once made to a glacier.

2. 'To reach the glacier we had to walk up a long valley. Before we could get on to the glacier itself, we had to climb over a large heap of stones and dirt which was at the end of the glacier. The heap of stones and dirt is called the End Moraine.'

3. 'Several little streams which were

formed from the melting ice were seen coming from the end of the glacier. The water was quite brown, owing to the dirt that was in it.

CROSSING A CREVASSE (A DEEP CRACK) IN A GLACIER

4. ‘After climbing over the End Moraine, we came upon the ice of the glacier. The ice here was much broken by cracks. The cracks were very large, and men

sometimes fell into them and were lost for ever. Our guide had a long rope which he tied round our waists, so that if one of us slipped down one of the dangerous cracks, the others might hold him up, and help to pull him out. We looked down some of the cracks, and were surprised to find how beautifully blue the ice was.

5. 'Sometimes, in order to get out of the way of some of the bigger cracks, we had to walk upon heaps of stones and rubbish at the sides of the glacier. These heaps of rubbish at the sides are called Side Moraines.

'As we walked farther up the glacier, the ice became more and more even, and we could see very few cracks.'

6. 'Where does the rubbish come from ? ' asked Tom.

'It is made of large and small pieces of rock which have been broken off by the glacier as it has moved along.'

7. 'Does a glacier move ? ' asked Tom.

'Yes,' said his father, 'and as it moves, it wears away the rocks over which it passes, and carries large and small pieces of rock with it. These pieces collect chiefly at the sides and ends, thus forming the moraines.'

'How funny it must be to see the ice move ! ' said Tom.

A GLACIER SCENE SHOWING THE GLACIER MOVING DOWN A VALLEY

'Ah, you cannot see it move,' replied his father. 'A glacier moves very slowly—only a few feet in a whole year.'

8. 'How is a glacier made?' asked Tom.

'Well!' said his father, 'you have played at snow-balls, and you know that if you press the snow very hard, the inside of the ball turns into a cake of ice. Much snow falls in the valleys between high mountains, and the upper layers of snow press on the lower ones, and turn them into ice. The ice gently glides down the valley and forms a glacier.'

LESSON 26

A VOLCANO

op'-po-site
Ve-su'-vi-us
vol-ca'-no
li'-quid
rep-re-sents'
re-flec'-tion
or'-din-a-ry
rum'-blings
be-gin'-ning
build'-ings
trav'-el-ling
com-plete'-ly

1. Look at the picture on page 84. It is a picture of a mountain which seems to be on fire. The name of the mountain is Vesuvius.

2. Vesuvius is a volcano, and we will try to understand what a volcano really is.

3. You know that the inside of the earth is very hot, and that only the outside or crust of

the earth is cold. Sometimes the hot matter inside forces its way through the crust, and makes a large hole in it. Steam, dust, ashes, and lava are forced through this hole. Lava is red-hot liquid rock.

4. A volcano is a hole in the earth's crust, out of which dust or lava or ashes are thrown.

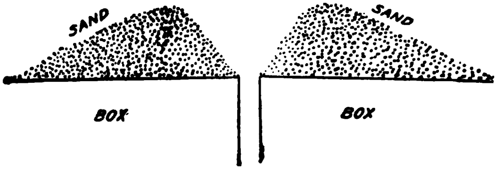


DIAGRAM SHOWING THE WAY IN WHICH THE SAND ARRANGES ITSELF ROUND THE HOLE IN THE BOX

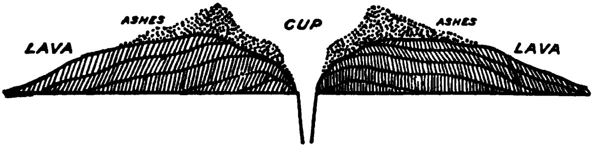
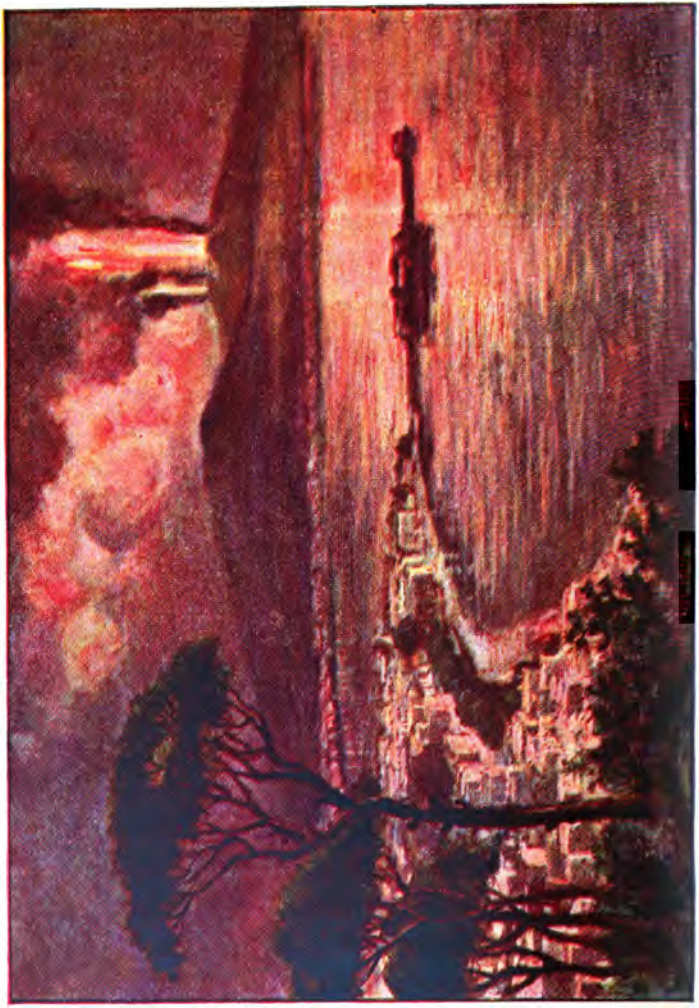


DIAGRAM OF A VOLCANO

5. Here is a box with a hole in it. Suppose some ashes were forced out of this hole; they would first rise in the air, and afterwards fall. I will pour some sand on to the box, and we will suppose that this sand represents the falling ashes. Some of the sand falls into the hole, but most of it forms a little hill round the hole.

6. This will help us to understand how a



VESUVIUS IN ERUPTION

volcano is formed. Dust and ashes and sometimes lava are thrown out of the hole, and these things collect around the hole, and by and by form a hill or mountain.

7. The mountain in the picture seems to be on fire, but it is not. What seems to be fire is thought to be only the reflection in the sky of the red-hot lava, which is at the bottom of the volcano.

8. It is wrong to say that a volcano is a burning mountain. When a candle burns, there is a flame, and the longer the candle burns the smaller the candle becomes.

9. But many people think that there are no flames in a volcano, and certainly the longer the volcano sends out ashes and lava, the larger it grows.

10. Vesuvius is not always as you see it in the picture. Sometimes it looks nearly like an ordinary mountain. The volcano is then 'asleep.' It may remain 'asleep' for years, until one day the people who live near it hear rumblings in the ground. They then know that the volcano is beginning to 'wake up.'

11. Next, the earth near the volcano shakes and trembles very much, and sometimes houses and buildings are shaken down. Then a loud 'bang' is heard, and clouds of steam rush

out of the hole in the volcano. Dust and ashes follow, and last of all comes the red-hot liquid lava.

12. Sometimes there is only a little lava; sometimes there is a great deal. Once there was so much lava that two cities were completely covered by it.

13. Vesuvius is in Italy. It would take you about two days to reach it, travelling all the time.

14. There are no volcanoes which are 'awake' in England, and neither are there any which are 'asleep.'

15. But we find some rocks in England which make us think that, once upon a time, there were volcanoes here. These volcanoes have been 'dead' for thousands of years. Part of Snowdon is perhaps a piece of a 'dead' volcano.

LESSON 27

EARTHQUAKES AND HOT SPRINGS

ket′-tle
aw′-ful
hap′-pen-ed
try′-ing
es-cape′
earth′-quakes
Ice′-land
gey′-sers
foun′-tains

1. The earth was once a red-hot mass. The outer part or crust has cooled down. When

men go deep down into the earth they find it is very hot. It is thought that the inside of the earth is still very hot indeed.

2. Water, when heated, becomes steam, which takes up much more room than water. If you look at the kettle boiling on the fire, you will see that the steam sometimes lifts up the lid.

HOUSES AFTER AN EARTHQUAKE

3. If you tied the lid down strongly, closed up the spout, and let the kettle remain on the fire, the water would still go on being turned into steam. This steam would want more

room, and by and by would burst the kettle. It would break with an awful 'bang,' and anyone in the room would very likely be killed.

4. It would be very silly to try this, but from the awful things that have happened when boilers of steam-engines have burst, we know exactly what would take place.

5. You have read about springs, and you have learned how water sinks down into the earth. Some of the water from springs, or from the sea, sinks down very low, until it comes near the hot places inside the earth. There it is turned into steam.

6. This steam, in trying to escape, shakes the crust of the earth, and sometimes causes great rents or cracks in its surface. These shakings of the earth are called 'earthquakes.' This is not the cause of every earthquake, but many happen in this way.

7. Earthquakes happen very often in some parts of the world. Over a hundred years ago an awful earthquake happened at Lisbon. Nearly all the houses were shaken down, and hundreds of people were killed. Very few earthquakes are felt in England, and those which we do have are only very little ones.

8. Sometimes the water is made hot in the inside of the earth, but is not turned into

steam. This hot water forms a hot spring. There are hot springs at Bath and at Matlock in England.

9. In Iceland there are some very fine hot springs called 'geysers.' They look something like fountains, and they shoot hot water high into the air.

LESSON 28

EVENING ON THE LAKE

gent′-ly
pur′-ple
splen′-dour
sum′-mits
si′-lent
e′-ven-ing
dis′-tant
mu′-sic
chant′-ed
con′-vent
sigh′-ing
mount′-ain
re-ply′-ing
an′-them
sus-pend′-ed
de-vo′-tion

1. Gently sway the waving branches
    Round the sleeping pine-clad lake.
Purple gleams of sunset splendour
    Bright the snowy summits make;

2. Now across the silent waters,
    With the fading evening ray,
Floats the sound of distant music
    Chanted in the convent gray:

3. Softly sighing, sweetly dying,
    O'er us flying comes the strain,
Mountain breezes now replying
    Send the anthem back again.

EVENING ON THE LAKE

4. Idly hangs the oar suspended,
While the boatman breathes a prayer,
Praise and true devotion blended
Seem on high the soul to bear.

LESSON 29

THE WORK OF AIR AND WATER

Part I

prom'-is-ed
dream'-ed
hol'-i-day
wrin'-kled
leath'-er
cer'-tain-ly
sigh'-ed
non'-sense
re'-col-lect
re-mem'-ber-ed
lis'-ten
laugh'-ed

1. Mary's mother had promised to take her to the mountains and lakes in the North of England. Mary was very anxious to go, because she wanted to see some real mountains. She lay awake one night thinking about her visit, and when at last she went to sleep, she dreamed that she was really on her holiday.

2. She thought that one day, when she was quite alone, she saw a little old man coming towards her. He was very small, very funny-looking, and very, very old. His hair was quite white, and the skin of his face was like wrinkled leather.

3. 'Oh dear, oh dear,' he said. 'I am so

tired, walking first over one mountain and then over another. It was much better when it was flat.'

'When it was flat!' said Mary; 'what are you talking about? Why, it was never flat!'

'Oh yes, it was,' said the old man. 'It was flat when I was young.'

4. 'When you were young,' said Mary. 'You are certainly very old; but you cannot be more than a hundred years old. My grandfather was a very old man, and he died when he was a hundred years old.'

'A hundred years,' sighed the old man. 'Why, I am *thousands* of years old.'

'Nonsense,' said Mary. 'You will be telling me next that you are older than Adam.'

'So I am,' said the old man.

5. Mary laughed. 'Then you must be silly,' she said, 'for Adam was the first man, and if you say you are older than Adam, you cannot be a man at all.'

'Ha! ha!' said he, 'quite right, Mary. I am not a man at all; I am a Goblin.'

'O—o—oh!' cried Mary, half afraid.

6. 'Now, do not be afraid,' said the Goblin. 'I will not hurt you. Just listen to me.

'I tell you again that I can recollect when all the land here was flat. I came here thousands of years ago, just when the land had been pushed up from the bottom of the sea.'

7. Mary remembered that her teacher had told her that all the dry land was once at the

bottom of the sea, and she began to think that perhaps there was some truth in what the Goblin was saying.

LESSON 30

THE WORK OF AIR AND WATER

PART II

lis'-tened
care'-fully
weath' er
hol' lows
val' leys
ac' tion
scoop'-ed
un-e' ven

1. Mary now listened carefully, and the Goblin went on as follows :—

'Some parts of this land were formed of hard rock, and some parts of soft rock. The rain and the wind, the frost and the snow wore away the soft rock, but left the hard rock standing ; and so the land began to be uneven.

2. 'Then, once upon a time, ever so long ago, the weather was very, very cold, and all the land was covered for a long time with ice and snow. Large glaciers were formed, and these glaciers, as they moved along, scooped out the rock and left deep hollows.

3. 'When the glaciers melted, the water from them filled the hollows and made the lakes which you see about here.'

'How pretty they are!' said Mary.

'Pretty! do you call them?' said he. 'I do not like them at all. I cannot swim, and I have to walk miles to get round them.

4. 'I do not like the rain and the rivers, the frost and the snow, for they are the things that have made many of the mountains and valleys here.'

AN ENGLISH LAKE. DERWENTWATER

(*From a Photo by* FRITH)

5. 'I thought that mountains had been pushed up out of the earth by the action of fire, or something like that,' said Mary.

'Well, Mary,' said the Goblin, 'I can see you are a good girl who learns her lessons well at school. Some mountains have been formed like that, but many of them have been made in the way I have told you. I have been here all the time, and I ought to know.

6. 'The rain and the rivers, the frost and the snow have worn away a great deal of the soft rocks, thus forming the valleys, while they have left nearly all the hard rocks standing. These form the mountains.

7. 'So all the land has become nasty and uneven, and when I want to get anywhere I have to climb mountains, go down valleys, and walk miles round lakes, instead of being able to go straight along over flat ground.'

8. The Goblin seemed quite angry, and stamped his foot with rage.

LESSON 31

THE WORK OF AIR AND WATER

PART III

growl'-ed
wear'-ing
car'-ry-ing
laugh'-ed
hol'-i-days
beau'-ti-ful
dif'-fer-ence
love'-ly
tod'-dled
mut'-ter-ing
al'-ter-ed
ac'-tion

1. 'But I like the mountains and the hills, the valleys and the lakes,' said Mary.

'Oh, do you?' he growled. 'Well, they

will not last for ever, they will not last for ever. The rain and the river, the frost and the snow are slowly but surely wearing away even the hardest rocks. The rivers are carrying the worn-out rocks to the lakes, and filling them up.

2. 'Some day everything will be worn down level, the lakes will be filled up, and all will be nice and flat again.'

'Not before my holidays are over, I hope,' said Mary.

The Goblin laughed. 'Oh no,' said he, 'not so soon as that. You need not be afraid.'

3. 'I hope it will not be for ever so long,' said Mary, 'for I want to come to this beautiful place again.'

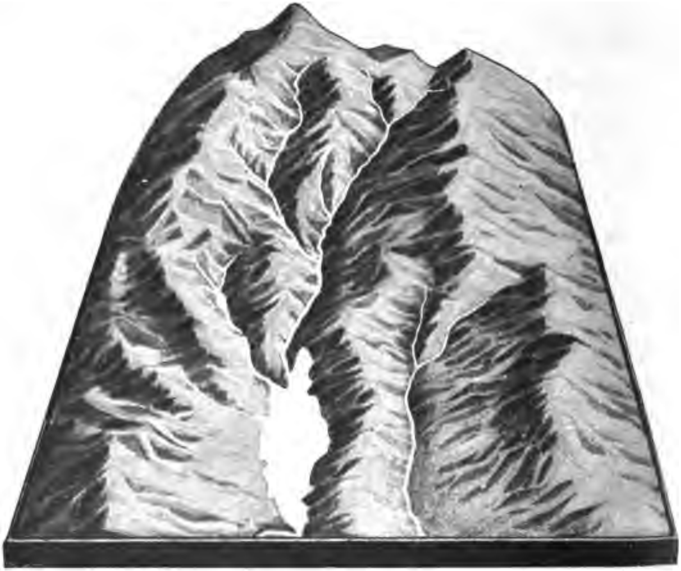
'Beautiful! do you call it? I call it horrid —not a flat place anywhere. But there! you need not be afraid, Mary; it will not be flat in *your* time.

4. '*You* will never be able to see any difference, but *I* can see that even the tallest mountains are slowly wearing away. In thousands of years to come, when everything is flat again, it will be lovely!

5. 'But I shall have to wait a long, long time. Oh dear, oh dear, I have to climb three more mountains before I can get home.'

The Goblin toddled away, muttering to himself.

6. This was, of course, only a dream of Mary's, but there was a great deal of truth in it, more truth than there is in most dreams.



A RIVER FLOWING INTO A LAKE

7. Every part of the earth is being slowly but surely altered by the action of water, and by the action of the air. Air and water are slowly wearing away the land. Large rocks are little by little worn down into small rocks.

Small rocks are worn down into large stones, large stones into smaller ones, and small stones into dust.

8. The rivers are carrying away the stones and dust, and putting them into lakes and into the sea. So, little by little, the land is being worn out, and the lakes and seas are being filled up. But this goes on *very* slowly, so slowly that we do not notice the change.

LESSON 32

THE WIND

blow′-ing **dif′-fer-ent** **al′-ways**

1. I saw you toss the kites on high
And blow the birds about the sky;
And all around I heard you pass,
Like ladies' skirts across the grass—
O wind, a-blowing all day long,
O wind, that sings so loud a song!

2. I saw the different things you did,
But always you yourself you hid.
I felt you push, I heard you call,
I could not see yourself at all—
O wind, a-blowing all day long,
O wind, that sings so loud a song!

3. O you that are so strong and cold,
O blower, are you young or old?
Are you a beast of field and tree,
Or just a stronger child than me?
O wind, a-blowing all day long,
O wind, that sings so loud a song!

R. L. STEVENSON.

LESSON 33

CIRCLES

crick'-et
cir'-cle
mar'-bles
cir-cum'-fer-ence
cen'-tre
curv'-ed
re-col-lect'
com'-pass-es
di-am'-e-ter
chalk
pen'-cil
straight

1. One fine morning, the teacher took the boys into the playground. He drove a stick into the ground.

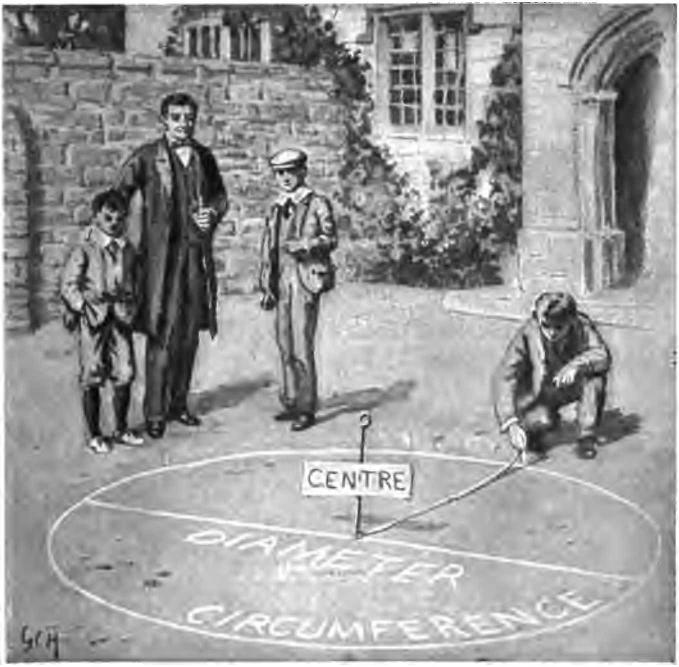
'Cricket! What fun!' thought some of the boys.

2. Then he took a piece of string and tied it to the stick. He next tied a large piece of chalk to the other end of the string and made a circle.

'Not cricket, but marbles,' they all thought.

3. Next he made the string longer, and drew a larger circle.

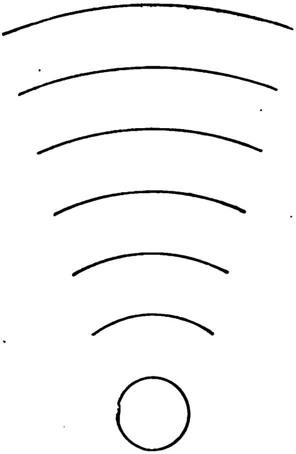
'Not cricket, nor marbles,' thought the boys, and they began to wonder what new game it could be. But all the boys did not wonder, for Jack Lazy was in the class, and he never did anything if he could help it.



4. The teacher said: 'Jack, I want you to join two pieces of string so as to make a long piece, which will stretch nearly to the playground wall. Tie one end to the stick in the

ground, and tie the other end to the piece of chalk. Then make a large circle, as I have done.'

5. Jack went all the way round, and made a fine large circle. The teacher said that the curved line which Jack had drawn was called the Circumference of the Circle, and that the stick marked the Centre or middle of the Circle.



6. The teacher then showed them a piece of red cord a foot long, and told one boy to place it over a foot of the circumference of the smallest circle. The string was curved into a bow shape.

7. He next told the same boy to place the same string over a foot of the circumference of the largest circle. The string was hardly curved at all, and was very nearly straight. The teacher said: 'I want you to recollect that a small part of the circumference of a very large circle is almost a straight line.'

8. In the afternoon the boys had a drawing

lesson. Each boy drew with a pair of compasses a circle on paper. The leg of the compass which stuck in the paper marked the centre of the circle, and the other leg, with the lead pencil in it, traced the circumference.*

9. Then each boy ruled a straight line through the centre, right across the circle, and made it end on each side at the circumference. The boys were then told that this line was called the Diameter of the circle. They measured the lengths of the diameter and the circumference, and found out that the circumference was a little over three times as long as the diameter.

LESSON 34

CIRCLES AND SPHERES

pen'-ny
side'-ways
ei'-ther
sol'-diers
dif'-fer-ent
for'-wards
back'-wards
shad'-ow
cir'-cu-lar
po-si'-tion
al'-ways
mat'-ter

1. Look at the things on the table in front of you. You can see a ball, a hoop, a plate, and a penny. They are all round things.

2. Now roll each. The ball and marble roll

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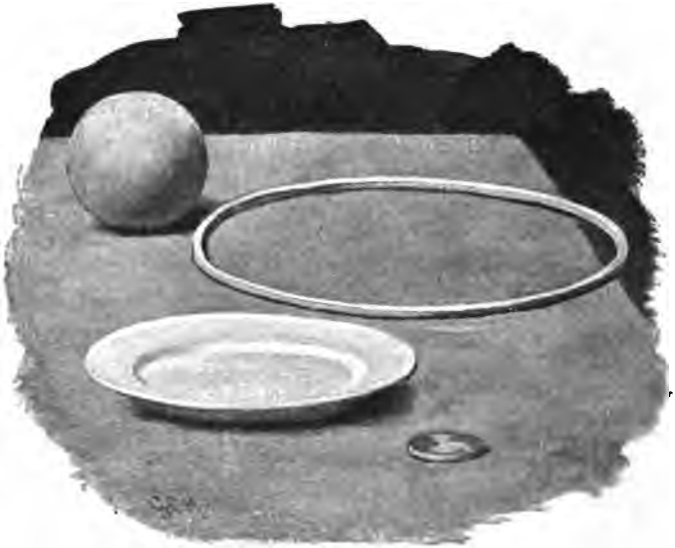
* See p. 114.

easily for a long time, but the penny, the hoop, and the plate do not roll so well.

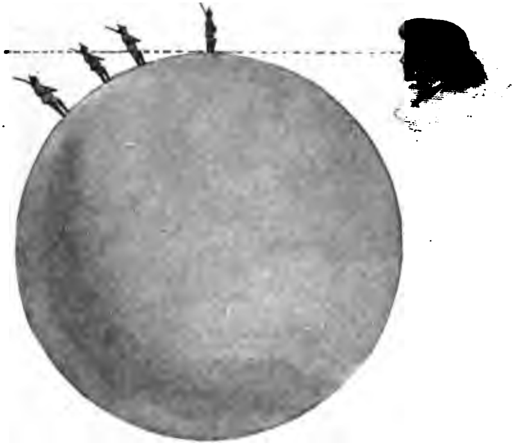
Turn the hoop, the plate, and the penny sideways and look at them. They do not appear round at all now. Turn the ball and the marble any way you please, and they always appear round. Things like the ball and the marble are called Spheres.



A penny is a circle in shape, so is a hoop, and so is a plate. The round things on the table are either circles or spheres.

3. Here you see a clay ball with four tin

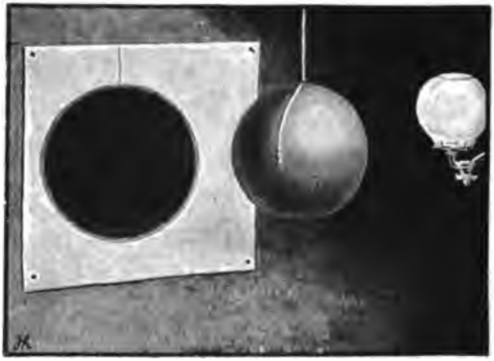
soldiers standing on it. Look at the little girl in the picture, and place your eye on a level with the top of the clay ball, just as she does. You can see the whole of the first soldier—head, body, legs, and feet. But you cannot see the legs of the second soldier, and you can see only the head of the third. The fourth soldier you cannot see at all.



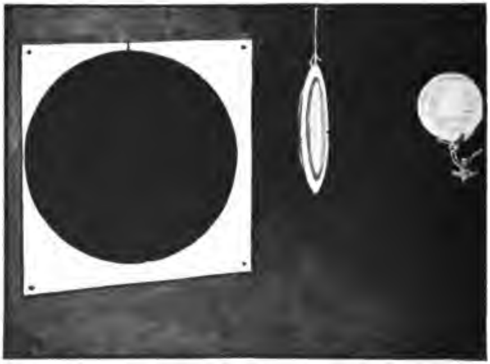
4. Now place the four soldiers on the table. You can see the head, body, legs, and feet of each of them.

5. Make the tin soldier walk over the sphere. He can walk anywhere—forwards, backwards, or sideways. Stand the plate on its edge in such a way that you can see

the whole of one side of it, and make your soldier walk again. He can walk forwards

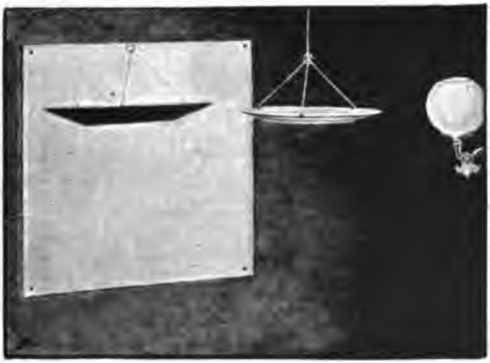


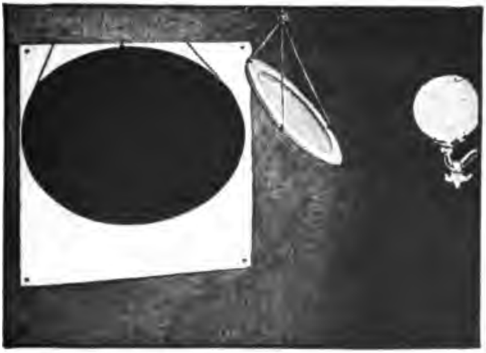
or backwards; but when he tries to walk to the right or left, he falls off.



6. Come with me into this dark room. Here is a strong light which throws a shadow

of this ball on the wall. No matter which way I hold the ball or the light, I always get a circular shadow.





7. I use a plate and get a circular shadow if I hold the plate in one position, but in some other positions the plate throws a long

shadow, and if I hold the plate sideways I get a straight shadow on the wall.

8. A sphere always throws a circular shadow. A circle does not always throw a circular shadow.

LESSON 35

THE SHAPE OF THE EARTH

Part I

be-lieve′
walk′-ed
ques′-tions
far′-ther
un-der-stand′
learn′-ed
pen′-ny
rea′-sons
dif′-fer-en-ce
where-as′
cir′-cle
cir′-cu-lar

1. Tom had heard that the earth was round, but he could not believe it, for it seemed quite flat to him.

If he walked towards the church, he went along a flat road. His way to school was along a flat path, and the road to the next village was flat too.

2. So, one day, when the teacher said that he would like some boys to ask him some questions, Tom asked: ‘Please sir, is the world round or is it flat?’

3. ‘Well, Tom,’ said the teacher, ‘which do you think it is?’

'Flat,' answered Tom.

'How much of it can you see?' asked the teacher.

'All the way to the church in the next village.'

'Yes,' said the teacher, 'that is about four miles away, and if we walked very fast we should get there in about an hour.

4. 'But have any of you gone any farther?'

Two boys had gone in the train to the seaside, which was fifty miles away. Another boy said that his father had been to New Zealand, and that the steamer took more than six weeks to get there.

5. 'Very well,' said the teacher, 'you can see that the earth must be a very big place, if it takes a steamer six weeks to get to some parts of it.

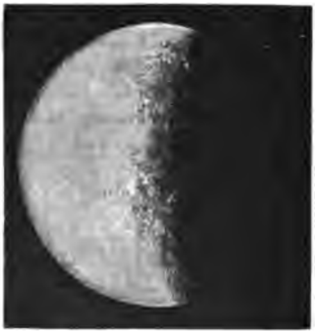
6. 'You can also understand that you can see only a very small part of the earth, if you can see only to the next village. The little bit you can see does seem flat, but that does not prove that it is really flat.

7. 'A small part of the large circle which Jack drew in the playground seemed almost flat, but still it was a part of a large circle. In the same way, that part of the world

which we can see, and which seems to be flat, might be a small part of a very large circle.

8. 'But the earth is not a circle like a penny or a hoop. It is a sphere, and you have learned the difference between a circle and a sphere.

9. 'You will recollect that we found out that a sphere always throws a circular shadow, whereas a circle does not always throw a circular shadow.



PHOTOGRAPH SHOWING THE EARTH'S CIRCULAR SHADOW SEEN DURING AN ECLIPSE OF THE MOON

10. 'Sometimes the sun throws a shadow of the earth on the moon. This shadow is always circular. So, one of the reasons for believing that the earth is a sphere is, that it always throws a circular shadow on the moon.'

LESSON 36

SHAPE OF THE EARTH

PART II

en′-gines
un′-cle
watch′-ed
where-as′
dis-ap-pear′-ed
ho-ri′-zon
far′-thest
re-sem′-bles
flat′-ten-ed
di-am′-e-ter
or′-ange
e-qua′-tor

1. Mary's uncle was a sailor, and once, when he was going on a long voyage, Mary's aunt took her to see the ship start from the port.

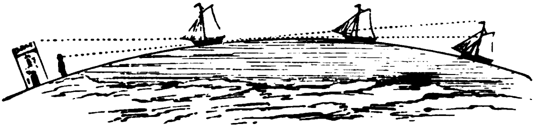
2. After Mary had said 'Good-bye' to her uncle, her aunt took her to the top of a cliff, so that she might see the ship for as long a time as possible.

3. The ship had a large hull or body, in which were the engines, the rooms for the sailors, and the places in which the cargo was packed away. It had two tall masts as well as a funnel, from which came some black smoke.

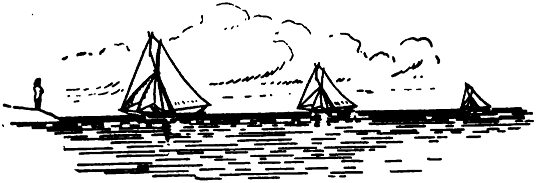
4. Mary sat on the cliff for a long time, and watched the ship steam away. First the hull seemed to get smaller, and at last it could not be seen at all, but the masts and funnel could still be seen. Then the masts and funnel disappeared, and at last Mary could see only the

smoke, which floated like a little cloud on the line where the sea and sky seemed to meet. She knew that this line was called the horizon.

5. It seemed just as though the ship had sunk into the sea. But Mary was not a bit afraid that the ship had really gone down, for she was the little girl whom you have seen looking at the toy soldiers on the clay ball.



THREE SHIPS SEEN ON A ROUND WORLD



THREE SHIPS AS THEY WOULD BE SEEN ON A 'FLAT WORLD'

6. She knew that only the head of the farthest soldier could be seen, because the soldiers were standing on a sphere. She knew, too, that the reason the hull of the vessel disappeared first, and then the masts and funnel, was, because the earth is a sphere, like the clay ball.

7. The earth, however, is not quite a perfect sphere. It is flattened just a little at the North and South Poles. The diameter of the earth from the North Pole to the South Pole is about twenty-six miles shorter than the length of the diameter of the earth at the equator.

8. Some people say that the earth is round like an orange. But an orange is often very flat at the top and bottom, whereas the earth is only a little flat at the North and South Poles.

9. The shape of the earth more nearly resembles the shape of a ball than the shape of an orange.

LESSON 37

THE SIZE OF THE EARTH

di-am′-e-ter
cir-cum′-fer-ence
meas′-ur-ed
rep-re-sents′
thous′-and
start′ ed
tun′-nel
ex-act′-ly
re-col-lect′
ex-pect′
min′-utes
through

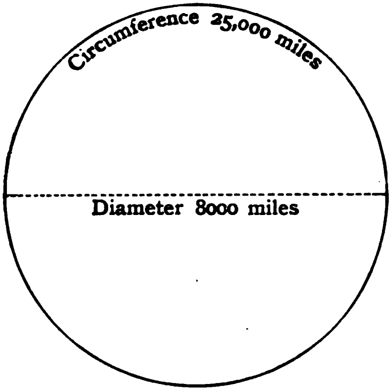
1. ‘Now, boys,’ said the teacher, ‘I want one of you to measure the diameter of the circle which I have drawn on the blackboard.’

2. Tom measured it, and found that the diameter was exactly eight inches.

3. ‘How long do you think the circum-

ference is ?' asked the teacher. 'Over twenty-four inches,' answered the best boys, who recollected about the circles which they had drawn with the compasses.

4. 'Quite right,' said the teacher. 'I am glad that you have remembered that the length of the circumference of a circle is a little more than three times the length of its diameter.



5. 'If every inch of the diameter represents a thousand miles, what distance would the whole diameter represent?'

6. 'Eight thousand miles,' answered all the boys.

7. 'Quite right, and I want you to recollect that the length of the diameter of the earth is eight thousand miles.'

8. 'Then the circumference will be over twenty-four thousand miles,' said Tom.

9. 'Yes, or, more exactly, twenty-five thousand miles,' said the teacher.

10. 'Here I have a globe with the parts of the world marked upon it. Willy Late said that his father had been to New Zealand, and that it took him six weeks to get there. I will show you where New Zealand is. You see it is on the other side of the world, and nearly opposite to England. If it took Willy's father six weeks to get half-way round the world, it would take him about twelve weeks or three months to go all the way round.'

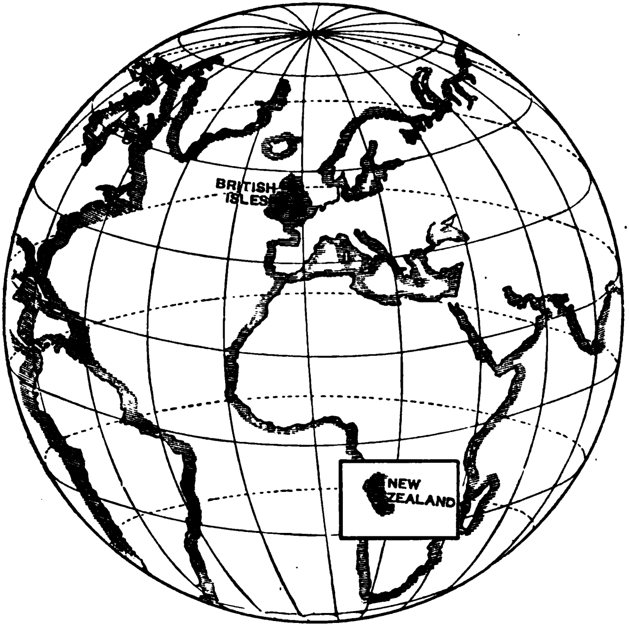
11. 'Has anybody ever been all the way round the world?' asked one of the boys.

12. 'Oh yes,' was the answer, 'it is quite a common thing now for people to go all round the world. The first Englishman to go all the way round the world was Sir Francis Drake, who lived about three hundred years ago, and his voyage lasted over two years.

13. 'Before that time, people had thought that the earth was flat, and they were afraid to sail too far away, in case they fell over the edge. But Drake sailed on and on and on, and by and by came to the place from which

he started, and thus helped to prove that the earth is a sphere.

14. 'We have just said that the diameter of the earth is about 8,000 miles. If we could make a tunnel through the earth, from England to New Zealand, that tunnel would be about 8,000 miles long.'



NOTE.—New Zealand cannot be seen when looking at this half of the Earth. A glance at a globe will show the pupil that New Zealand is opposite the British Isles on the other side of the world.

15. The teacher then asked, 'If Tom could have his home in England, and his school in

New Zealand, how long would it take Tom to get to school, if he walked through the tunnel, and walked twenty miles every day?'

16. The boys who were best at doing sums thought that he would walk one hundred miles in five days, one thousand miles in fifty days, and eight thousand miles in four hundred days.

17. 'Why, that is more than a year,' said Tom.

18. 'How jolly!' thought Jack Lazy. 'I should have to go to school only once a year.'

19. 'If Tom took four hundred days to get to school,' said the teacher, 'Willy Late would, I expect, take four hundred days and five minutes, for he would be sure to be five minutes behind time.'

LESSON 38

THE CHILD'S WORLD

beau'-ti-ful
beau'-ti-ful-ly
won'-der-ful
curl'-ed
shak'-ing
friend'-ly
thous'-ands
hard'-ly
pray'-ers
whis'-per
seem'-ed
dress'-ed

1. Great, wide, beautiful, wonderful world,
With the wonderful water round you curled,
And the wonderful grass upon your breast—
World, you are beautifully dressed!

2. The wonderful air is over me,
And the wonderful wind is shaking the tree;
It walks on the water, and whirls the mills,
And talks to itself on the tops of the hills.

3. You, friendly earth, how far do you go,
With the wheat fields that nod, and the rivers that flow,
With cities, and gardens, and cliffs, and isles,
And people upon you for thousands of miles?

4. Ah! you are so great, and I am so small,
I hardly can think of you, world, at all;
And yet, when I said my prayers to-day,
A whisper within me seemed to say:
'You are more than the earth, though you're such a dot;
You can love and think, and the earth cannot'!

Lilliput Lectures.

LESSON 39

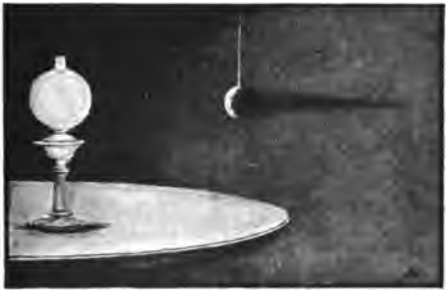
DAY AND NIGHT

PART I

sup-pose'
rep-re-sents'
ro-tates'
ro-ta'-tion
im-ag'-in-ary
run'-ning
pic'-ture
up'-right

1. ‘I want you all to suppose that you are in a dark room. I light a lamp, and you see on the table a large ball, which has an iron rod running through it.

2. ‘The lamp lights up only one half of the ball. The lamp represents the sun, and the ball represents the earth. You can understand, I think, that if both the earth and the sun kept quite still, one half of the world would always have day, and the other half would always have night.



3. 'I move the ball round on the iron rod, which passes through it. The iron rod is the axis upon which the ball turns or rotates.

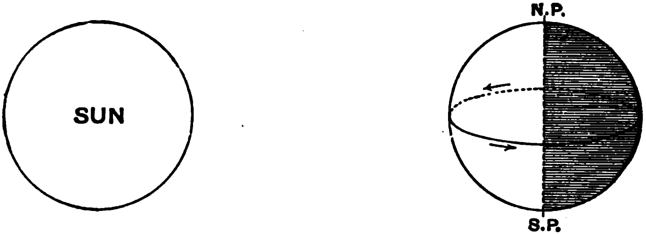


DIAGRAM SHOWING THAT IF THE EARTH ROTATED ON AN AXIS WHICH WAS PERPENDICULAR, DAY AND NIGHT WOULD BE OF EQUAL LENGTHS IN ALL PARTS OF THE WORLD

'The earth rotates on its axis something like the ball rotates on the rod. But you must not think that the axis of the earth is a real pole or rod. It is merely an *imaginary* line which we *suppose* runs through the earth, and round which the earth rotates.

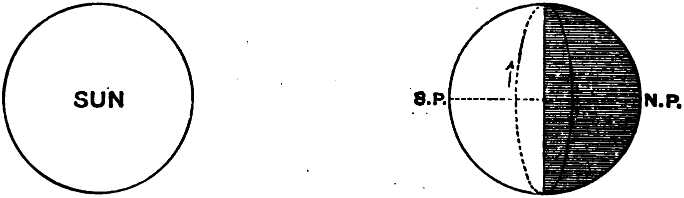


DIAGRAM SHOWING THAT IF THE EARTH ROTATED ON AN AXIS WHICH WAS HORIZONTAL, ONE HALF OF THE WORLD WOULD HAVE PERPETUAL DAY AND THE OTHER HALF WOULD HAVE PERPETUAL NIGHT

4. 'The ends of the earth's axis are called

the Poles. There are two Poles—the North Pole and the South Pole. The Poles do not stick out of the earth in the same way as the iron rod sticks out of this ball. The poles are merely places on the earth's surface, where we imagine the axis of the earth ends.

5. 'I now rotate the ball once. Every part of the ball is for half the time in the light, and for the other half of the time in the darkness.

6. 'The earth moves or rotates on its axis, something like I have made the ball rotate on the iron rod. The rotation of the earth is the cause of day and night.

7. 'I stand the rod quite upright, and cause the ball to rotate. Every part of it is for half the time in the light, and for half the time in the darkness. If the axis of the earth were upright like the rod of the ball, then you can see that every place would have twelve hours day and twelve hours night.

8. 'But the days are long in summer, and short in winter. So, the axis of the earth cannot be upright, as the rod of the ball is.

9. 'I will now place the rod of the ball level as you see it in the picture. I next rotate the ball. Half of the ball is always

in the light, and half is always in the darkness.

'But it is not always day in one half of the world and always night in the other half. So the axis of the earth cannot be level as the rod of the ball is.'

LESSON 40

DAY AND NIGHT

PART II

hap'-pen
slant'-ing
po-si'-tion
learn' ed
im port' ant
caus'-ed
dif'-fer-ent
ro-tate'
peo'-ple
Christ'-mas
mid'-dle
to-wards'

1. 'We have seen that the axis of the earth cannot be upright, and we have also seen that the axis of the earth cannot be level.

2. 'Let us see what happens if the rod of the ball is neither upright nor level—that is, if it is slanting.

'I make the top of the rod of the ball slant a little towards the lamp. This represents the North Pole slanting a little towards the sun. I mark a spot to show the position of England.

3. I now rotate the ball. England, you

see, is for a long time in the light, and for a short time in the darkness.

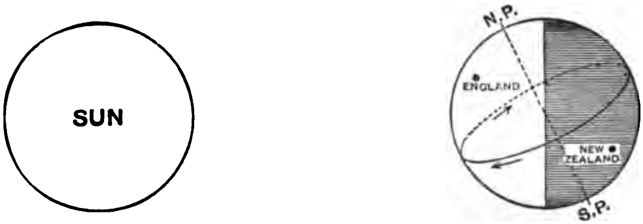


DIAGRAM SHOWING THAT IF THE EARTH ROTATED ON AN AXIS WHICH WAS INCLINED TOWARDS THE SUN, THE DAYS IN ENGLAND WOULD BE LONG AND THE NIGHTS SHORT. IN SUMMER IN ENGLAND THE AXIS OF THE EARTH IS INCLINED TOWARDS THE SUN

'In summer the days are long and the nights are short. So, when it is summer in England the North Pole of the earth must be slanting towards the sun.

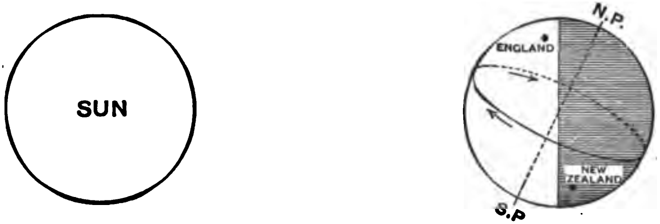


DIAGRAM SHOWING THAT IF THE EARTH ROTATED ON AN AXIS WHICH WAS INCLINED AWAY FROM THE SUN, THE DAYS IN ENGLAND WOULD BE SHORT, AND THE NIGHTS LONG. IN WINTER IN ENGLAND THE AXIS OF THE EARTH IS INCLINED AWAY FROM THE SUN

4. 'I next change the position of the rod of the ball, so as to represent the North Pole

slanting *away* from the sun, and I rotate the ball.

5. 'The spot which represents England is for a short time in the light, and for a long time in the darkness. In winter we have short days and long nights. So, when it is winter in England, the North Pole of the earth must be slanting away from the sun, and the South Pole must be slanting towards it.

6. 'We have learned two important things. The first is, that day and night are caused by the rotation of the earth on its axis. The second is, that the different lengths of day and night are caused by the different ways in which the ends of the axis of the earth point to the sun.

7. 'I put the ball once more so as to represent the North Pole of the earth slanting towards the sun. I mark the position of New Zealand on the ball. When I rotate the ball, you see that the spot marked New Zealand is for a short time in the light, and for a long time in the darkness. When the people in England are having long days and short nights, the people in New Zealand are having short days and long nights.

8. 'Or, in other words, when it is summer

in England, it is winter in New Zealand. And, of course, when it is winter in England, it is summer in New Zealand.

'Christmas day falls in the middle of summer in New Zealand, not in the middle of winter as it does in England.'

LESSON 41

TWILIGHT

twi′-light
rud′-di-er
wav′-ing
cra′-zy
cloud′-y
win′-dow
shad′-ow
moth′-er
fish′-er-man's
press′-ed
ceil′-ing
col′-our
cot′-tage
child′-ish
roar′-ing
o′-ce-an

1. The twilight is sad and cloudy,
The wind blows wild and free,
And like the wings of sea-birds
Flash the white caps of the sea.

2. But in the fisherman's cottage
There shines a ruddier light,
And a little face at the window
Peers out into the night.

3. Close, close it is pressed to the window,
As if those childish eyes
Were looking into the darkness
To see some form arise.

4. And a woman's waving shadow
Is passing to and fro,
Now rising to the ceiling,
Now bowing and bending low.

5. What tale do the roaring ocean
And the night-wind, bleak and wild,
As they beat at the crazy window,
Tell to that little child?

6. And why do the roaring ocean
And the night-wind, wild and bleak,
As they beat at the heart of the mother,
Drive the colour from her cheek?

H. W. LONGFELLOW.

LESSON 42

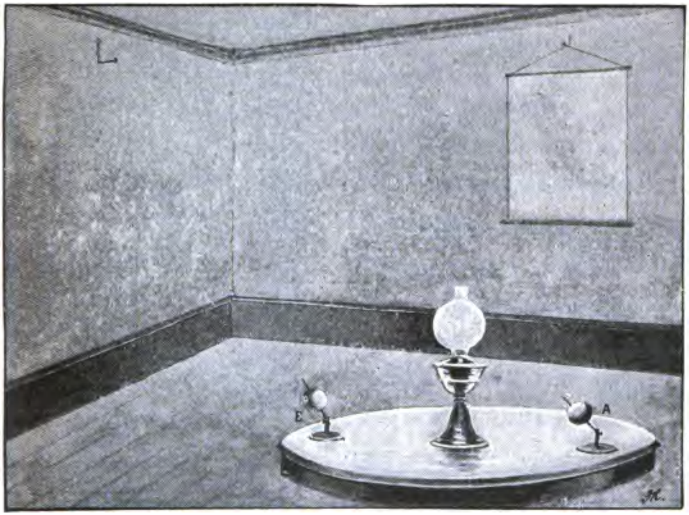
THE JOURNEY OF THE EARTH ROUND THE SUN

sail'-ors
heav'-ens
care'-ful
stop'-ped
jour' ney
jour'-ney-ing
mo'-tion
re-volve'
trav'-el-ling
pos-i'-tion
ex-plain'
ro-tate'

1. 'We have found out that sometimes the North Pole is pointing towards the sun, and that at other times, the South Pole is pointing towards the sun. We have learned, too, that sailors can tell the North by means

of the Pole Star. The North Pole of the earth must then always be pointing to the same star in the heavens.

2. ‘Let us suppose that a nail, high up on the wall, represents the Pole Star. I slant the rod of my ball (A), so that the top of it points towards the nail, and at the same time points towards the lamp, just as you see it in the picture.



3. ‘This represents the North Pole pointing towards the Pole Star, and also towards the sun—that is, it shows the position of the earth when it is summer in England.

4. 'I now move the ball round the lamp, still keeping the top of the rod pointing towards the nail. At last, I get to the other side of the lamp, and I have been careful, all the time, to keep the top end of the rod pointing towards the nail. But I find that now the top end of the rod is slanting *away* from the lamp (*B*).

5. 'The path of the ball represents the path of the earth, in its journey half way round the sun. We started with the ball in the position in which the earth is when it is summer in England, and we stopped with the ball in the position in which the earth is when it is winter in England.

6. 'I finish the journey round the lamp, and thus represent the whole journey of the earth round the sun. All the time the earth is journeying round the sun, it is also rotating on its own axis.

7. 'This is hard for you to understand,

and I will try to explain it. You have played at whip-top. When you whip the top, you make it spin or rotate on its own axis. If you whip hard, you can drive the top forward.

'You have caused the top to move in two ways. You have made it spin on its own axis, and you have also made it move onwards.

8. 'The earth has two motions, just as your top has two motions. It spins or rotates on its axis, and it also moves forward in its journey round the sun. The earth is said to revolve round the sun. The revolution of the earth round the sun is the cause of the seasons.

9. 'The earth rotates on its axis once in every twenty-four hours. It revolves round the sun once in a year. You know that there are three hundred and sixty-five days in a year, so you will understand that the earth spins round three hundred and sixty-five times whilst travelling once round the sun.

10. Three hundred and sixty-five rotations of the earth on its axis make up one revolution of the earth round the sun.

SUMMARY

LESSON I. (*p.* 5).

1. Sea-water is salt.
2. Some salt is brought into the sea by the rivers.
3. This salt is formed of the little grains of rock-salt washed away from the land. These little grains are dissolved in the water.
4. The saltness of the sea varies. It is most salt where it is very hot, where no large rivers flow into the sea, and little rain falls.

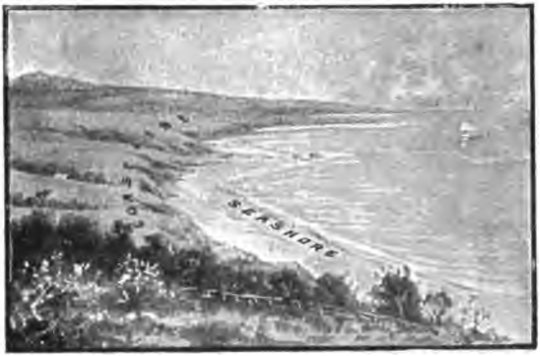
LESSON II. (*p.* 7).

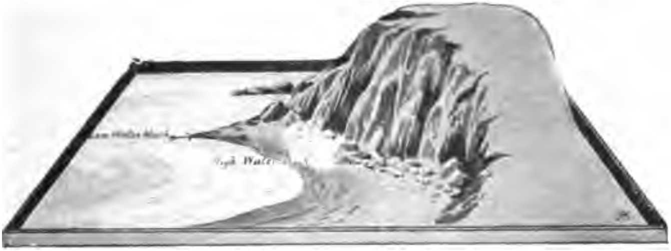
1. The largest seas of all are called **Oceans.**
2. There are **five oceans.** The **Pacific** is the largest; the **Atlantic** is the great trade ocean. The next largest to the Atlantic is the **Indian.** We do not know much of the two **Polar Oceans**, the **Arctic** and the **Antarctic.**
3. Rivers are great and cheap highways for trade.
4. **A sea is a part of an ocean which has land nearly all round it**—*as* the Irish Sea. *See p.* 40.

LESSON IV. (*p.* 13).

1. **A Coast is land next to the sea.** It is land washed by the sea.
2. A **Sea-shore** or **Beach** is land washed by the sea, and lying between high- and low-water mark. The one word is

very often used for the other, and then 'coast' and 'shore' mean the same thing.





3. The nature of the coast depends upon the force of the waves, and the kinds of rock of which the coast is made.

LESSONS V. & VI. (*pp.* 17–25).

1. The sea wears away the coast.

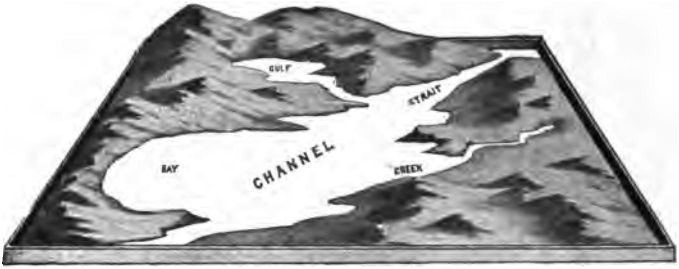
2. There are two kinds of beaches—**Shingle Beaches** and **Sandy Beaches.**

3. The kind of beach depends upon the kind of rock of which the coast is made. Hard rocks give Shingle Beaches, soft rocks Sandy Beaches.

4. All rocks wear away into sand in time, the hard rocks wearing much more slowly than the soft ones.

LESSON VIII. (*p.* 26).

1. **A Strait is a narrow neck of water which joins two larger portions together**—*as* the Straits of Dover. *See p.* 40.
2. In some places straits are called **Narrows.**



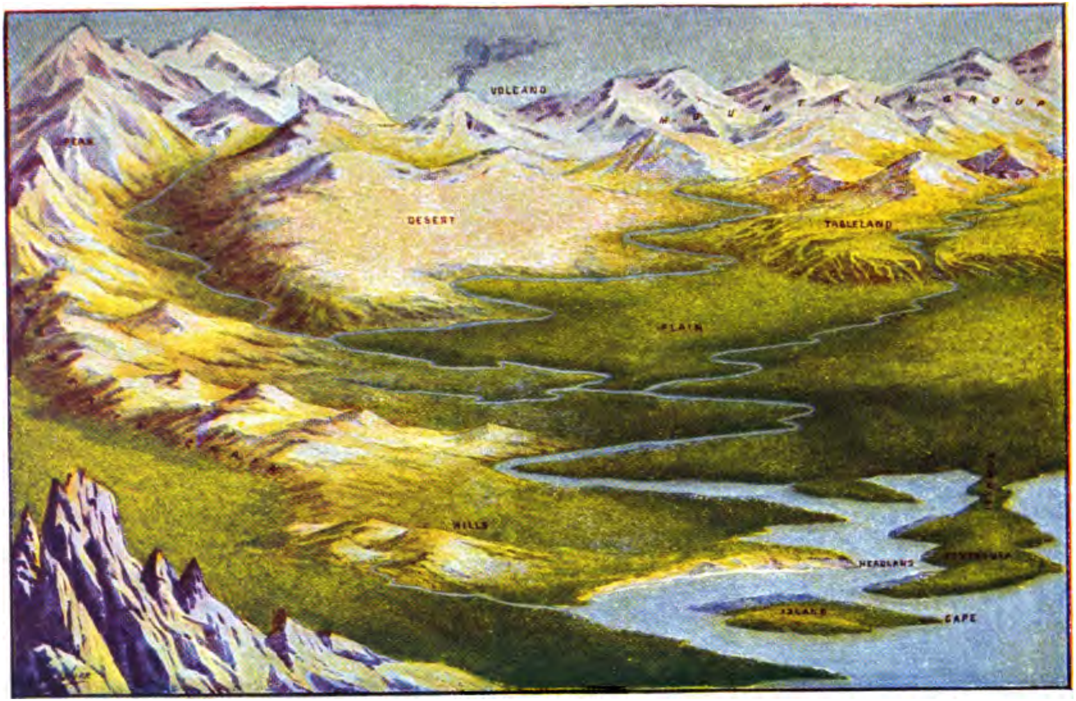
3. Some long and shallow straits are called **Sounds**—*as* Plymouth Sound.
4. A broad, large strait is called a **Channel**—*as* the English Channel. *See p.* 40.

LESSON IX. (*p.* 29).

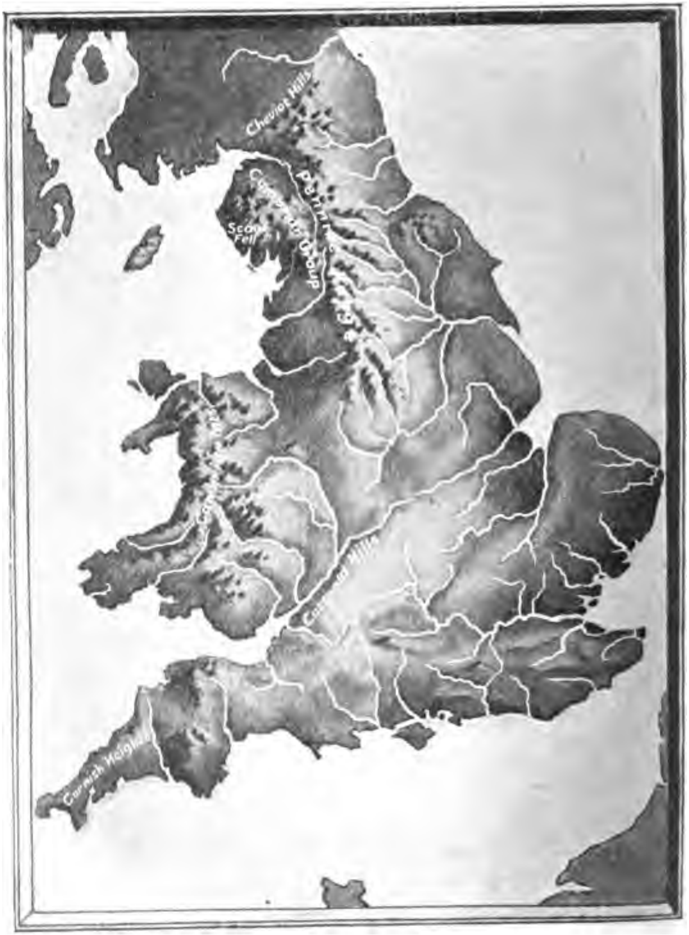
1. **A Bay is a wide opening of the sea into the shore**—*as* Mount's Bay. It does not run far into the land, and as a rule it is wider at the entrance than elsewhere.
2. **A Gulf is a long, narrow arm of the sea which runs up into the shore**—*as* Solway Firth.
3. A **Haven** is a place of safety and rest for ships—*as* Milford Haven.
4. Most havens are called **Harbours**—*as* Portsmouth Harbour.
5. A **Roadstead** is a part of the sea near the shore where ships can anchor in safety—*as* the Yarmouth Roads, the Downs.

LESSONS X. & XI. (*pp.* 33-38).

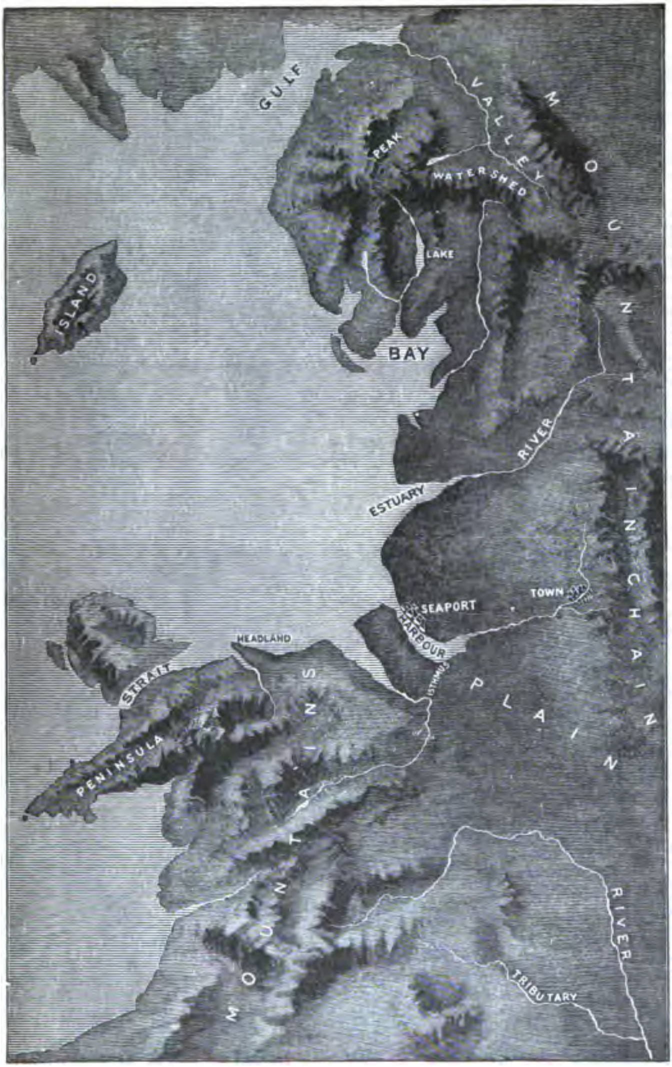
1. **A Cape is a piece of land jutting out into the sea**—*as* Land's End.



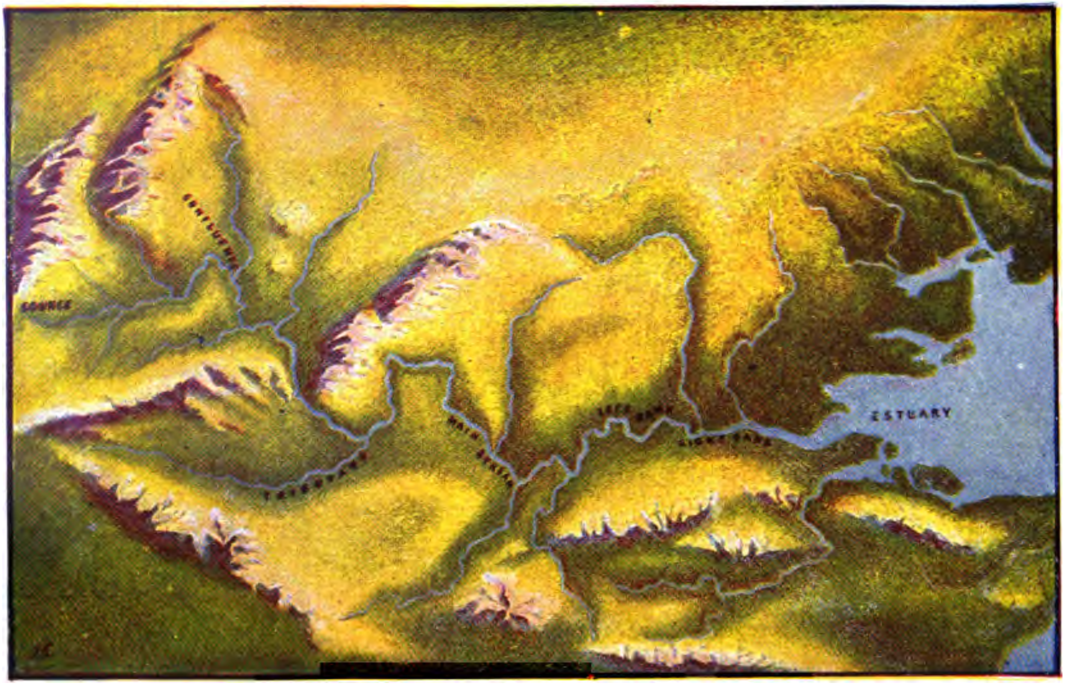
PARTS OF LAND



A RELIEF MAP OF ENGLAND AND WALES



PART OF ENGLAND AND WALES: TO ILLUSTRATE DEFINITIONS



THE PARTS OF A RIVER FROM ITS SOURCE TO THE SEA

2. A cape is sometimes called **Head**, **Point**, **Bill**, **Nose**, **Naze**, or **Ness**.

Head—Beachy Head.
Point—Start Point.
Bill—Portland Bill.
Nose—Hope's Nose.
Naze—The Naze.
Ness—Dungeness.

3. As a rule, Heads are *high* Capes—*as* Beachy Head.
4. Naze and Ness mean the same as Nose.
5. The word cape means a head.
6. A **Promontory** is a bold rocky cape—*as* Beachy Head. Most of those capes called Heads are Promontories.

LESSON XII. (*p*. 38).

1. **An Island is a piece of land which has water all round it, and which is smaller than the mainland**—*as* the Isle of Wight, the Isle of Man.

2. **A Mainland is a piece of land lying near an island**, or a group of Islands. It is larger than the islands. The mainland itself may be an island to a larger mainland; e.g.:

Great Britain is the Mainland to the Isle of Wight.
Europe is the Mainland to Great Britain.

3. **A Continent is one of the largest portions of land.** It is so large that there is no larger piece of land to be a mainland to it—*as* Europe, Asia, Africa, America.

4. A Continent may also be called a large mass of land containing a number of countries.

5. **A Country is a part of a continent under the government of one king or ruler**—*as* England, France.

LESSON XIII. (*p*. 42).

1. **A Peninsula is a piece of land with water nearly all round it**—*as* Cornwall, England.

2. A Peninsula is nearly an island. Peninsulas are joined to the mainland by a broad base, *as* Cornwall; or by a narrow base, *as* the Land's End peninsula.

3. **An Isthmus is a narrow neck of land which joins a**

peninsula to the mainland—*as* the peninsula of which Land's End is the point.

LESSON XIV. (*p.* 46).

1. **A Hill is land which rises above the land round about it, and which ends in a more or less rounded point or peak.**

2. **A Mountain is land which rises high above the land round about it.** A Mountain is a high hill. A 'hill' over 2,000 feet in height is called a Mountain.

3. The Downs and the Cotswold Hills are hills; Snowdon and Scawfell are mountains.

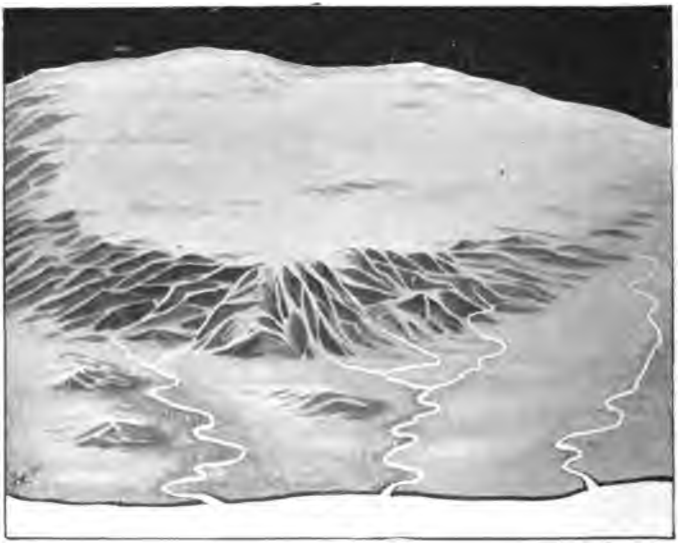
LESSON XVI. (*p.* 50).

1. **A Chain or Range of Mountains is a long stretch of mountains lying across the land**—*as* the Pennine Chain.

2. **A Group of Mountains consists of many mountains lying near one another**—*as* the Cumbrian Group.

LESSON XVII. (*p.* 55).

A TABLELAND



A PLAIN

1. **A Plain is a large stretch of flat, low-lying land**—*as* the Eastern Plain.

2. **A Tableland or Plateau is flat land lying high above the level of the sea**—*as* Dartmoor.

3. **Lowlands** are low-lying lands which may rise and fall in gentle hills.

4. **Highlands** are the mountainous parts of the country.

5. **A Valley is low-lying land between hills or mountains**—*as* the Vale of the White Horse, the Vale of York.

LESSON XIX. (*p.* 60).

1. **A River * is a stream of fresh, running water that drains the land, and flows into a lake, another river, or into the sea**—*as* the Thames.

2. The **Source** of a river is the place where it begins.

3. The Source may be in a Spring, a Glacier, or a Lake. The Thames rises in seven springs, and the Severn in a lake.

4. The speed at which a river flows depends on the height of its source, the length of its course, and the nature of the ground over which it passes.

5. When a river flows into another river, it is said to be a **tributary**, **affluent**, or **feeder** of that river—e.g. the Medway is a tributary of the Thames.

6. The **Mouth** is that part of the river which runs into a lake, or the sea.

LESSON XX. (*p.* 64).

1. The **Banks** are formed by the land on either side nearest the river.

2. The **Right Bank** is the land on the right hand of a person moving from the source to the mouth. The **Left Bank** is on the left hand of such a person.

3. The **Course** of a river is the total length of the river, and the direction in which it flows—e.g. the course of the Thames is 215 miles, and it flows from West to East.

4. A **River System** is formed by a main stream and all its feeders. The river system of the Thames takes in the Thames itself and its feeders on either bank.

5. A **River Basin** is the name given to the stretch of land drained by the main stream and its feeders.

6. The bottom of a river is called its **Bed**.

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* See p. 136.

LESSON XXI. (*p.* 66).

1. The **Channel** of a river is the large, hollow gutter which has been washed out of the ground by the river in its course. It is the hollow ground between the whole of the Right and Left Banks.

2. A fast river wears away a deeper channel than a slow river. It wears away the ground much faster.

3. A **Water-shed** is the highland which divides one river basin from another—*as* the Pennine Chain.

LESSON XXII. (*p.* 69).

1. The rain water which soaks into the soil sometimes forms **Springs**.

2. The water sinks until it meets with clay, or some kind of rock through which it cannot soak.

3. It then collects, and wears its way out of the ground as a Spring.

4. Springs are found in many places, but chiefly in hills.

LESSON XXIV. (*p.* 74).

1. A **Landslip** is the sliding down of a large mass of land from the side of a mountain.

2. Landslips are often caused by water, which wears away the support of the rocks and the soil.

3. Landslips have occurred in the Isle of Wight, and in Dorsetshire.

LESSON XXV. (*p.* 78).

1. **A Glacier is a river of ice which slowly moves down a valley between mountains.** There are no glaciers in England, but many fine glaciers are found in Switzerland.

2. The Glacier wears out the land over which it goes, and deposits the worn-out matter at the sides (**Side Moraines**) and at the end of the glacier (**End Moraine**).

3. The ice of the glacier is formed of snow which has been pressed into ice by the weight of layers of snow above.

LESSON XXVI. (*p.* 82).

1. **A Volcano is a hole in the earth's surface through which dust or lava or ashes are thrown.**

2. Volcanoes are active (awake) or dormant (sleeping) or extinct (dead). Vesuvius is a dormant volcano. Snowdon is probably part of an extinct volcano.

3. It is wrong to say that a volcano is a burning mountain. There are no flames in a volcano, and the longer a volcano is active, the more ashes, lava, &c., collect round the hole.

4. A Volcano has generally formed a hill or mountain, but the hill or mountain is no part of the real volcano. It is the *hole* which is the volcano.

LESSON XXVII. (*p.* 86).

1. **Earthquakes** are tremblings in the earth, often caused by the formation of steam in the inside of the earth.

2. Water from springs or from the sea reaches very hot places in the earth's interior, and becomes turned into steam. The steam requires much more room than the water did, and in its efforts to get more room causes the earth to shake or tremble.

3. Earthquakes in England are slight and infrequent.

4. Hot Springs are found at Bath.

LESSON XXIX. (*p.* 91).

1. **A Lake is a piece of water with land all round it**—*as* Lake Windermere.

2. It contains still, fresh water.

3. Rivers run into and out of it.

4. Some lakes are called seas, but—

Lake.	*Sea.*
(1) A Lake has land all round it.	(1) A Sea has land nearly all round it.
(2) A Lake has fresh water.	(2) A Sea has salt water.

LESSONS XXX. & XXXI. (*pp.* 94–99).

1. Rain, river, winds, frost, and snow are slowly but surely changing the appearance of the land.

2. The action of air and water wears out the soft rock quickly and the hard rock slowly.

3. Many parts of the country which, ages ago, were more or less flat, are now more or less hilly. Hills and mountains are often the remains of hard rocks which have not been worn away by the action of air and water.

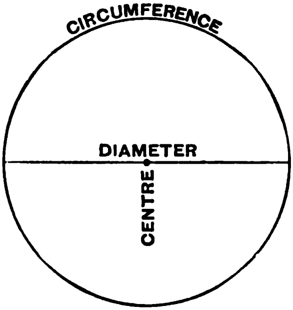
4. Many lakes have been scooped out by glaciers.

5. Rivers are slowly wearing away the land over which they flow, and carrying that land into seas and lakes.

LESSON XXXIII. (*p.* 100).

1. The line which bounds the outside of a circle is called the **Circumference**.

2. The **Centre** of a circle is the middle of a circle.



3. The **Diameter** of a circle is a straight line drawn through the centre of a circle, and which just touches the circumference on each side.

4. A small part of the circumference of a very large circle seems a straight line.

LESSON XXXIV. (*p.* 103).

1. A **Sphere** is circular in shape no matter from what point you look at it.

2. A Sphere always throws a circular shadow. A circle does not always throw a circular shadow.

LESSON XXXV. (*p.* 108).

1. The earth seems flat, but the fact that it seems flat is no proof that it is really flat.

2. We can see only a small part of the earth. A small part of the circumference of a very large circle seems to be a straight line. Therefore the earth might be a circle.

3. We believe the earth is a sphere because it always throws a circular shadow.

LESSON XXXVI. (*p.* 111).

1. Another reason for believing the earth to be a sphere is, that a ship at sea disappears in this order: first the hull, next the masts, and lastly the smoke from the funnel. If the earth were flat, the smoke and masts would go out of sight first, and the hull would remain in sight the longest, because it is the largest part of the ship.

LESSON XXXVII. (*p.* 113).

1. The Diameter of the earth is 8,000 miles long.

2. The Circumference of the earth is 25,000 miles long.

LESSON XXXIX. (*p.* 119).

1. By the **Rotation of the earth** is meant the movement of the earth on its axis.

2. The Rotation of the earth is the cause of day and night.

3. The **Axis** of the earth is an imaginary line running through the earth, and round which the earth rotates.

4. The ends of the axis are called the **Poles.** There are two Poles—the **North Pole** and the **South Pole.**

LESSON XL. (*p.* 122).

1. The different lengths of day and night are caused by the way in which the axis of the earth slants *towards* or *away from* the sun.
2. When the North Pole slants towards the sun, the days in places in the north of the world are long, and the days of places in the south of the world are short.
3. It is then summer in the north of the world, and winter in the south.

LESSON XLII. (*p.* 126).

1. By the **Revolution** of the earth is meant its journey round the sun.
2. The revolution of the earth is the cause of the seasons.
3. The **earth has two motions**—a rotation on its axis and a revolution round the sun.
4. The earth rotates on its axis once in a day; it revolves round the sun once in a year.
5. 365 rotations of the earth=1 revolution.

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